D. L. Tenha

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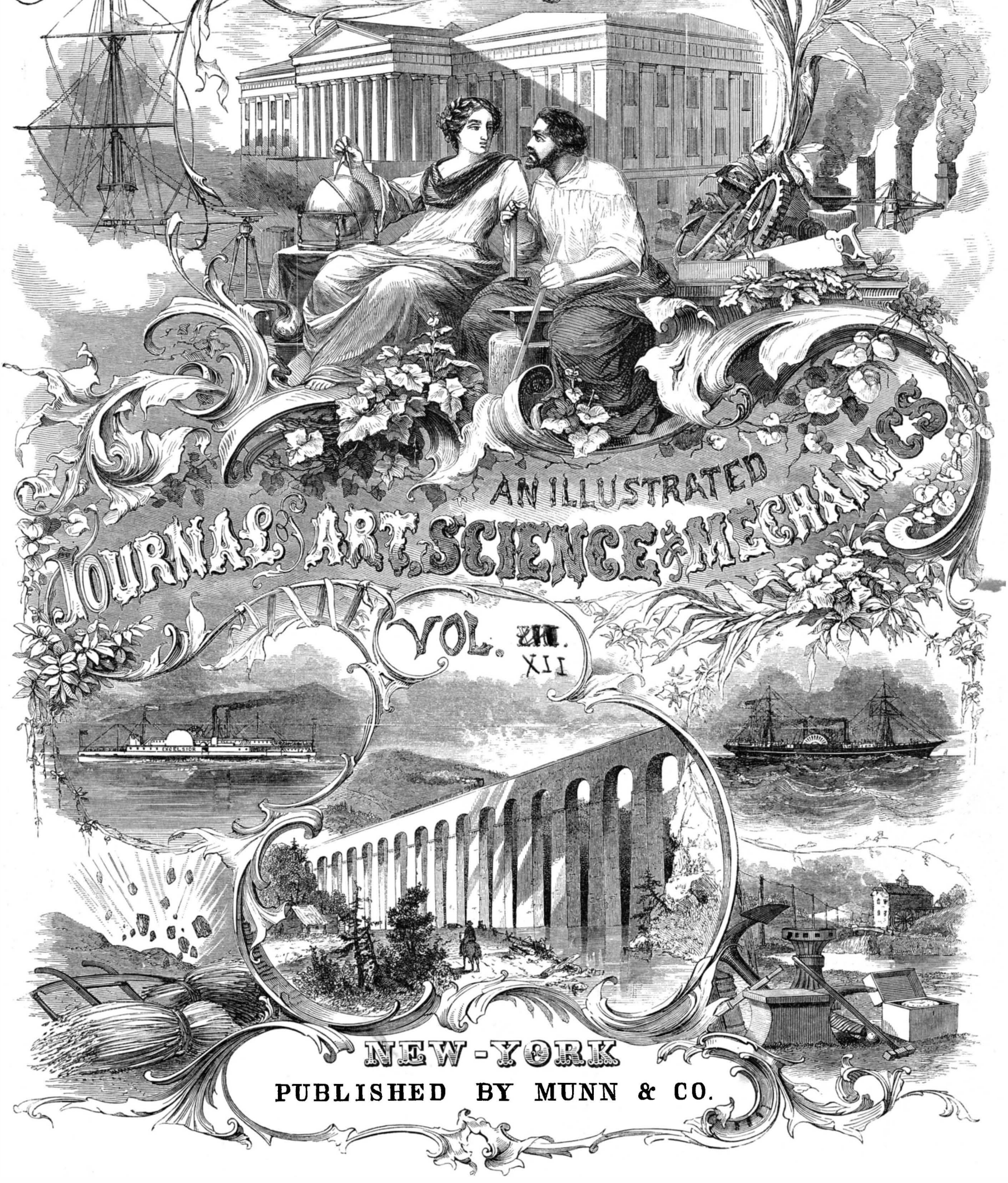

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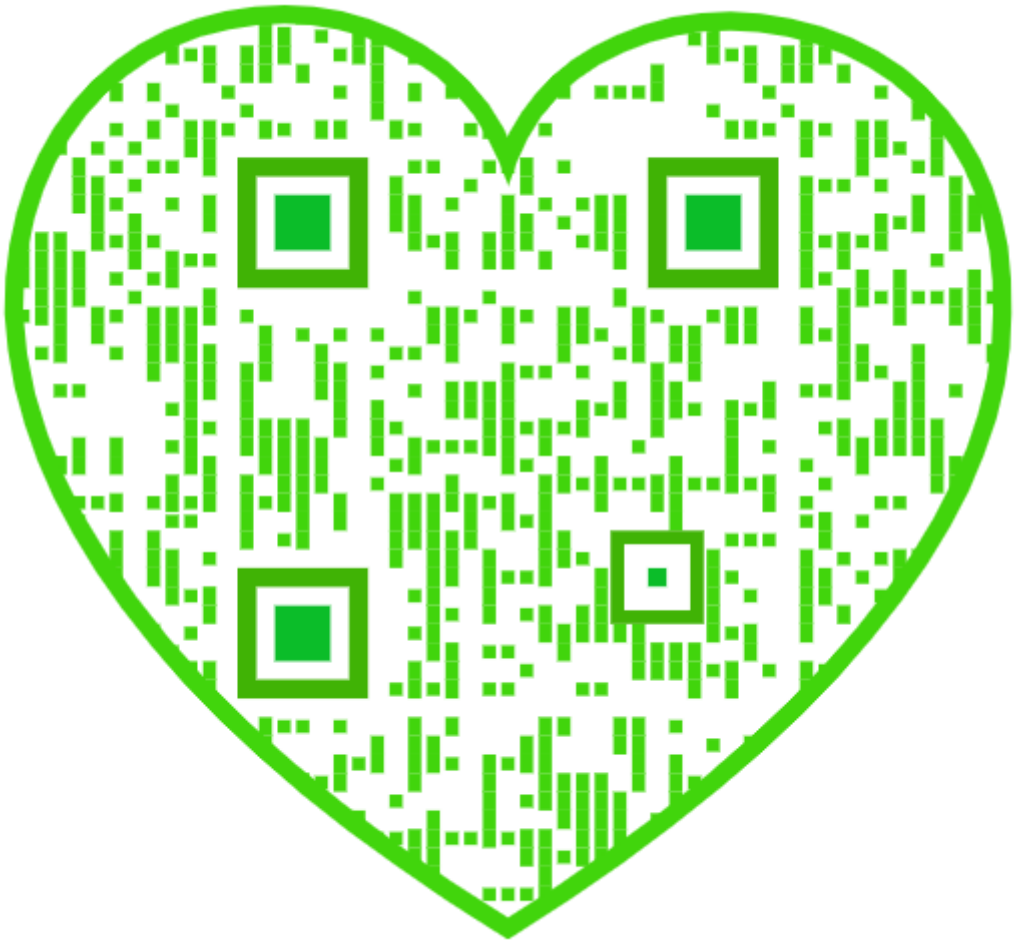

Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

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Improved Roller Gin.

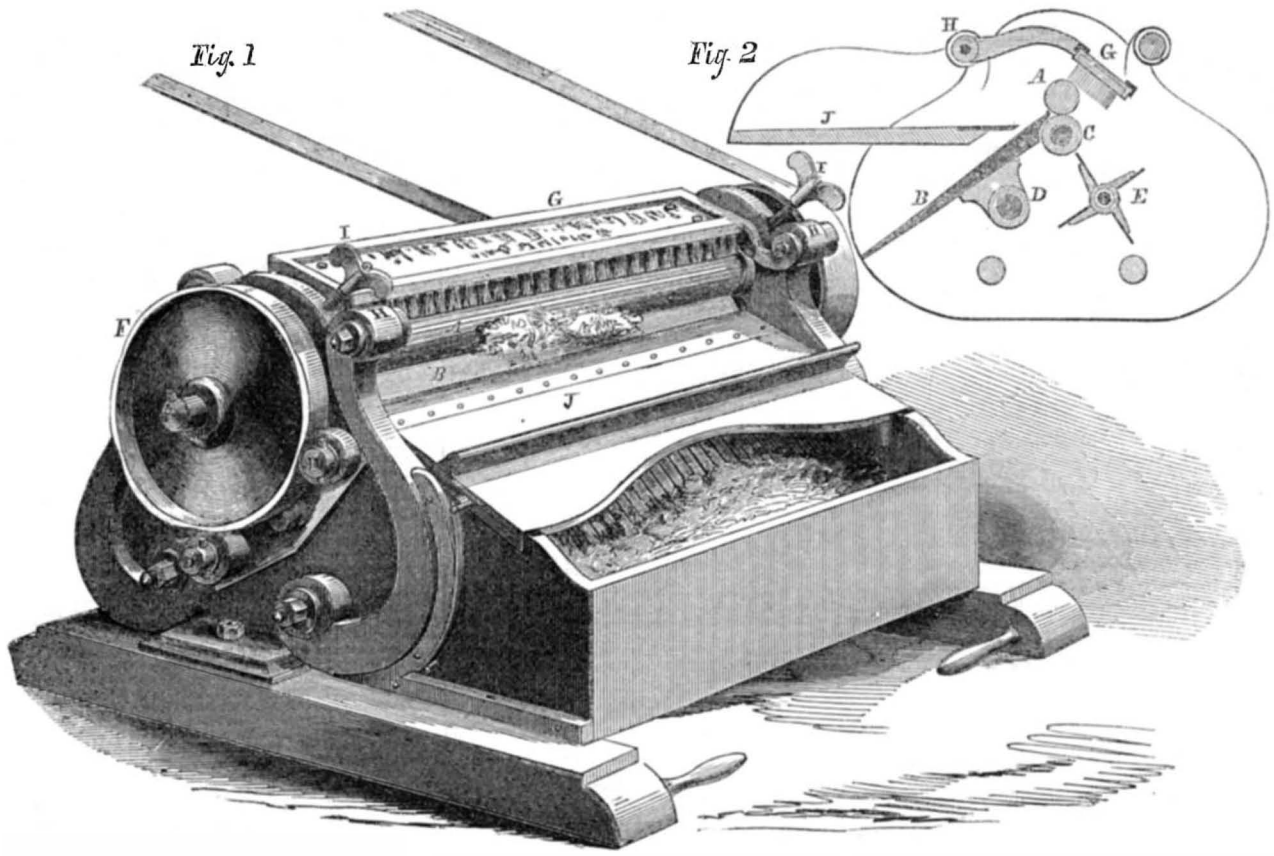
Some of the finest threads ever spun were of cotton. The sizes in common use in the manufacture of cloths vary from about No. 30 to No. 80, the higher number being the finest; but in the report of the great Exhibition of 1851, we find notices of yarns exhibited by one British manufacturer of numbers 200, 400 and 600. Another exhibited a sample of yarn, which, measured by the same standard, would be numbered 900. And the very finest, a thread so extremely small that it would require 167 miles to weigh one pound, would number, by the same gauge, over 5,000. There were no silk or linen threads that would compete with these.

The finest cotton yarns ever made were spun by native artists in India, but the fineness is not uniform. Modern cotton machinery produces a thread of greater average fineness, though not as small at some individual points.

Cotton has been raised in China since the thirteenth century; but the Sea Island, or black seed cotton of our country, the finest and most valued cotton used by civilized nations, was imported from Jamaica and Pernambuco, in 1786, and its culture was fairly established in the three succeeding years. The length of its fiber, and more especially its fineness and peculiarly delicate character, makes it unfit for ginning or separating from the seeds, in the ordinary manner—tearing it by saws—and the machine still in vogue for ginning this material, consists simply of two small rollers of wood. The first gins ever used, even on upland or short-staple cotton, were on a similar principle. The rollers catch the fibers and draw them forcibly through, while the seeds are excluded on account of their size. To make the angle sufficiently great, however, to repel the seed, it is necessary to make the rollers very small in diameter; and the amount of ordinary cotton ginned by one man or woman before the invention of Whitney's saw gin, was only about eight pounds per day. The long-staple is better adapted to this mode of ginning; still an operator without horse power will gin but about twenty-five pounds per day; and with all the power which can be desired, the action is very slow.

Many efforts have been made to invent rapid gins for Sea Island cotton. One planter is reported to have expended $5,000 in experiments, and many inventions have been attempted by others with little better success. The great merit of the roller gin is the perfection of the product; it does not rub or damage the staple. The action on the fiber is a simple grasping and pulling. Few of the substitutes have been equally simple in their action; or if so, few or none have siezed the fiber with equally soft fingers. Metallic rollers, pressed together with sufficient force to seize the fine filaments, crush and destroy their texture. The material of the old fashioned rollers is hickory wood, the diameter is but seven-eighths of an inch, and as a consequence, bearings must be provided at intervals of only from 8 to 12 inches, else the rollers would spring apart and allow the entrance and crushing of the seeds. The difficulties incident to the use of these gins are quite numerous, not the least of which is the very serious tendency to take fire from friction; and the bearings are almost invariably changed to charcoal in a very short time.

CHICHESTER'S ROLLER GIN.



The machine represented in the accompanying engravings, Figs. 1 and 2, is the invention of Mr. L. S. Chichester, and was patented on February 3rd, of the present year. It is a roller gin. One roller is steel, the other is iron covered with firm vulcanised india rubber. The surface of the latter gives exactly the desired action on the fiber, but would be very ill-suited to resist seeds. A separate plate, therefore, is provided, the edge of which is near the bite of the rollers, and the seeds, while being stripped, lie in the angle, not between the rollers, but between this plate and the upper roller. By slightly curving upwards the edge of the plate, a much greater angle is made to repel the seed than is secured even by the use of much smaller rollers, in the ordinary manner. To facilitate the action, a slight but rapid movement is given to the plate by a device, which will be described below.

Fig. 1 is a perspective view, and Fig. 2 a section of Mr. Chichester's gin. A represents a steel roller, about 20 inches long, between the bearings, and about one and a quarter inches in diameter. B represents the plate described, and C the india-rubber roller, three inches in diameter. The plate, B, is rigidly fixed upon a shaft, D. On one end of this shaft, D, outside the frame, is mounted a cross-piece, as represented, on which are two rollers D′ D′. A wheel, F, mounted on the shaft of C, is slightly scollopped, or cam-shaped, on its periphery, as will be observed on close inspection; and these successive elevations and depressions acting on the two rollers, D′ D′, give to the shaft D, and consequently to the plate B, a very rapid and positive vibrating motion, to the extent of nearly one-eighth of an inch at the acting edge. E is a small fan-wheel, which serves to remove any of the fibers which might adhere to C, and G is a stiff brush hinged to the points H, which serves also to strip the roller A. I, I, are thumb-screws, which serve to drive A down upon C with any required degree of pressure. J is a table or feeding-board, on which the cotton to be ginned is placed. A sufficient space is left between the edge of J and the face of B, to allow the seed to drop through and escape. The roller A is driven simply by "rolling contact" with C, and consequently there can be no difference in the velocity of their surfaces. The upper curved edge of the plate B, is about three-eighths of an inch from the bite, or point of contact, of the rollers. On first being pushed forward, the loose fibers of the cotton are drawn through by a simple contact with A, until they are caught by the bite and carefully separated from the seed with just sufficient violence to keep the latter continually turning, an operation which is materially aided by the vibratory movement of B. To increase the effect of the rollers in pulling the fibers, the surface of A is fluted, as represented in Fig. 1; but the flutings, and, in short, all parts of its acting surface, are kept very highly polished or burnished. This machine has ginned at the rate of 10 pounds per hour, the cotton, as may be supposed, not only possessing the character, but presenting the *appearance* of having been cleaned by the ordinary roller gin. The appearance of the fiber when exhibited in the market, is at present a matter of great commercial importance, as the purchasers are mainly in England and France, and are prejudiced against new inventions for this purpose, as they have found the product generally inferior.

There are no extraordinary difficulties connected with the raising of Sea Island cotton, except the increased trouble of picking and ginning it. Its pods or bolls are smaller than those of the ordinary Mexican, or short staple-cotton; but the main difficulty, as before observed, lies in the ginning. If this or any other gin is completely successful, the price of the goods may be cheapened, and the production of fine cotton very much increased. The growth of this plant, originally confined to a few islands on the coast of South Carolina and Georgia, has now been found to succeed over a very large tract of country, including nearly or quite the whole of Florida. Although partial to sea air, and probably to the employment of salt mud, rushes, &c., as a dressing, it is now raised with profit, under all its disadvantages, at points 150 miles from the sea. Mr. Chichester's gin is pronounced by parties familiar with this material, to be the best yet produced. It certainly appears to us the best within our knowledge. We have seen it in operation, ginning the finest varieties, worth one dollar or more per pound, with great rapidity, and performing the operation in a manner absolutely perfect.

For further particulars, address :—"The Union Roller Cotton Gin Co., No. 6 Liberty-street, New-York."

Nature the Teacher.

Hugh Miller says, in his last great work, "The Testimony of the Rocks," that there is scarce an architectural ornament of the Gothic or Grecian styles which may not be found as fossils existing in the rocks. The Illodendron, says Mr. Miller, was sculptured into gracefully arranged rows of pointed and closely imbricated leaves, similar to those into which the Roman architects fretted the torus of the Corinthian order. The Sigittaria were fluted columns, ornately carved in the line of channeled flutes; the Lepidodendra bore, according to their species, sculptured scales, or lozenges, or egg-like hollows, set in a sort of frame, and relieved into knobs and furrows; all of them furnishing examples of a delicate diaper work, like that so admired in our more ornate Gothic buildings, such as Westminster Abbey, or Canterbury and Chichester Cathedrals, only far more exquisite in their design and finish. No one can rise from the perusal of Mr. Miller's volume, without feeling convinced that it is one of the most interesting and erudite contributions to scientific literature of modern times.

Niagara Suspension Bridge.

This bridge appears to be a profitable concern. During the past year, ending April, the report of the company, recently published, states that the revenue amounted to $41,963, disbursements, $4,507, thus showing that the working expenses are but small. The dividend which it pays averages 15 per cent.

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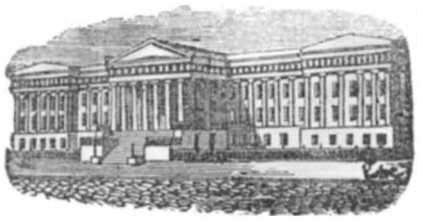

[Reported officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 23, 1857.

GAS GENERATORS—Napoleon Aubin, of Albany, N. Y.: I do not claim the mixing of materials for making gas, nor the introduction of gas making materials into a retort by means of a charger, nor the described method of closing the retort, nor the introduction of highly heated steam into the retort. for such devices have been either known, used or patented before.

I claim the use of a charger arranged and operated substantially as set forth.

PRINTING PRESSES—F. L. Bailey, of Boston, Mass.: I claim the combination and arrangement of the nipper, and holding springs applied to the sheet carrier, and made to operate therewith, substantially as described, and whether said springs be made stationary or adjustable laterally on their shaft.

I do not claim a sliding platen or plate moving out from beneath the type form for the purpose of receiving a sheet to be printed.

But I claim the sliding carrier or plate D', when made to move in an an inclined or vertical direction for the purpose set forth.

I also claim the combination of the sheet carrier or plate D, with ways placed on the platen or vibrating frame D, on which it slides, so that it may assume the positions for receiving the sheet to be printed, and also for giving the impression to the same.

REDUCING TOPSAILS—Thomas Batty, of Brooklyn, N. Y.: I claim, first, The arrangement of one or more bunt pennants, H, connected with the front of the sail, passing up the front thereof, and connected with the yard, and of a crane neck piece I, or its equivalent attached to the yard to work up and down said pennant or pennants, substantially as set forth, so that in lowering the yard, the wind may be expelled from the bunt of the sail towards the sides in the manner substantially as represented in fig. 2.

Second, The arrangement of the flat blocks, c c, through which the reef pennants run on the top of the yard, substantially as and for the purpose set forth.

[In the many reefing devices for sails hitherto employed, they have a tendency to gather the bunt or slack of the sail towards the center, and thus it catches the wind and bulges out, rendering it difficult to tie the reefing cords. By this improvement, as the yard is lowered, the wind is pressed entirely out of the center of the sail towards the edges, causing it to come snug up to the yard, in which condition it is easily held, and the reef points or cords tied round the yard to secure it. It is an excellent improvement.]

POLISHING RAW HIDE WHIPS—Eugene Blattner, of Philadelphia, Pa.: I do not confine myself to the precise means described of driving the nooked spindles, as that may be accomplished in a variety of ways.

But I claim the grinding pulley, I, and spindles d and m, when a simultaneous rotary motion is imparted to the same, and when they are arranged for joint operation, substantially in the manner set forth and for the purpose specified.

HOLDING AND ADJUSTING PLANE IRONS IN THEIR STOCKS—W. W. Chipman, of Lowell, Mass.: I claim the use and application of the apparatus for holding and adjusting the plane iron, substantially as and for the purpose described.

GRINDING MILL—Ezra Coleman, of Philadelphia, Pa.: I am aware that concaves have been adjusted eccentrically in order to grind finer or coarser, but not to grind faster or slower, therefore I do not claim an eccentric adjustment of the concave of a grinder.

I claim having the concave of a cob cutter adjusted in a circular line concentric with its axis and relatively to the mouth of the feed hopper, by means substantially as specified, so that it may be set to grind faster or slower, substantially as and for the purposes set forth.

The means specified for ensuring the rotation of the cob cutter with the grinder and its retention in proper place where the grinder is adjusted longitudinally, substantially as and for the purposes set forth.

[This mill is very peculiar in its construction both as regards the mechanism for cutting up corn stalks into feed, and that for grinding grain so as to produce flour or meal. The ribs of the grinding cylinder are so constructed that they cut for one half their length, and act as mortars or pestles along the other haif, and thereby operate more effectually upon the grain. The concave of the cob grinder is made adjustable, concentric with its axis, and can be set to cut faster or slower according to the power at hand. The grinding cylinder and cob cutter are on the same shaft, and both rotate together, but are independent in their longitudinal adjustment, and the two are partially separated by an elastic guard, so that nails cannot pass from the grinding hopper to the knives or stalk cutters. This mill, as a whole, is a very perfect machine, occupying but little space, and with a fanner can cut up feed and grind and bolt flour very rapidly and perfectly.]

SAW SET—Jacob Erdle, of West Bloomfield, N. Y.: I do not claim feeding the saw teeth to the punch by means of a pawl or hand, irrespective of the arrangement of the same, for that is a well-known mechanical device, and has been previously used for such purposes.

But I claim the two plates or hands, P M, when connected to the bar H, as shown, the bar H being actuated by the lever J, and the whole arranged substantially as described for the purpose of feeding the saw teeth to the punch in either direction as described.

[The devices claimed are very simple and efficient for the purpose of feeding the saw teeth to the punch both ways, and the punch is so adjusted that a perfect or true bearing action of the punch on the teeth is obtained to give it the proper set.]

BASKET HANDLES—Anthony Faas, of Philadelphia, Pa.: I claim basket handles as above described.

VAPOR BURNERS—Horatio Fairbanks, of South Brookfield, Mass.: I do not claim a burner formed with a vapor reservoir, and one or more secondary jets or jet pipes, for the purpose of vaporizing the liquid of the wick, so that the vapor so produced from said liquid may be burned as they may issue from a gas burner or jet pipe leading out of the upper part of the vapor chamber.

I claim my improved hydro-carbon vapor burner, as constructed with a secondary burner K, pipe H, recess D, formed as described, and a closing slide M, arranged to rotate on the body of the burner concentrically therewith, and constructed so as to be capable of either entirely or partially closing the recess D, so that air may be excluded more or less from the same, and heat be confined therein, substantially in manner and for the purpose as specified, when the said recess is provided with a secondary jet or burner, to operate as explained.

CENTRAL DRAFT JOINT OF CARRIAGES—Luther O. Rice, of Caistorville, C. W.: I do not wish to confine myself to the precise arrangement and construction herein set forth, but would include all modifications which substantially embrace my invention.

I claim the central draft joint, P, when constructed, arranged and used substantially as described.

VANE GOVERNOR FOR STEAM ENGINES, &c.—Francis Gustine, of Medford, Mass.; I claim the disks or vanes E, operating directly upon the valve rod toes as described, whereby the valve is actuated by the varying deflections of the vanes, as set forth.

VALVULAR ARRANGEMENT FOR FAUCETS, &c.—Edward Hamilton, of Chicago, Ill.: I do not claim broadly the employment of conical valves in water cocks. nor broadly the arrangement of valves in such a manner as that the pressure of the fluid shall keep the valves tight in their seats—an example of both of these features may be seen in C. A. Fautz's faucet, 1853.

But I claim the employment of a hollow conical perforated valve, b, in the manner substantially as described.

[This valvular arrangement in faucets, while it secures the keeping of them tight by fluid pressure easily, prevents them from sticking or becoming fast, and enables them to endure much longer than other valves, by obviating much friction.]

PUMPS—W. H. Harrison, of Philadelphta, Pa.: I do not desire to confine myself to the precise form of valve or bucket shown, as the same may be considerably varied without changing the result.

Neither do I claim the employment of two buckets moved simultaneously in different directions.

But I claim the combination of the chamber, A, barrels a and a', valved buckets H and I, rock shaft C, lever E and rods G and F, when the whole are arranged and constructed for joint operation, substantially in the manner and for the purpose specified.

PICKER SAWING MACHINES—John Haw, of Old Church, Va.: I claim as an improvement in picker saw mills the overhanging of the saw between braced guides, d and e, the space between which is adjustable by wedges, i i, and slotted braces, l and m, operating as specified.

CONSTRUCTING STORES—W. L. Johnson, of Peytonsville, Tenn.; I am aware that stores or other buildings have been before constructed in such manner as that the fronts could be thrown open, being hinged at their sides as doors, and that the shelves, counters, &c., have been built on trucks running or resting on rails laid in the floor of the building, and do not wish to be understood as laying any claim thereto.

I claim constructing the fronts, A A, with rails, b, corresponding to those on the floor, and hinged or pivoted thereto for the purpose of throwing down the said fronts in the plain of the floor, and forming a continuous road or track on which the trucks containing the counters, goods, &c., may be readily run out or clear of the building as described.

MANUFACTURE OF IRON—Wm. Kelly, of Lyon Co., Ky.: I claim blowing the blasts of air, either hot or cold, up and through a mass of liquid iron, the oxygen in the air combining with the carbon in the iron causing a greatly increased heat and boiling commotion in the fluid mass, and decarbonizing and refining the iron.

SAWING MILL—J. G. Kennedy, of Cincinnati, O.: I do not claim any parts of the machinery composing the improvement when taken separately for purposes set forth.

But I claim the arrangement of the several parts of machinery and saw employed in one frame, by which I am enabled to change and run the saw carriage in either direction for sawing both ways, or if desired, saw in one direction, and run the carriage back, as usual, in the other direction, without sawing, all as represented, and for purposes specified.

BORING MACHINES—L. B. Lloyd, of Warwick township, Pa.: I claim the combination of spring draw rod and table, arranged and operating to limit the depth of hole as described.

FINISHING BRUSH HANDLES—Thomas Mitchell, of Lansingburg, N. Y.: I claim the arrangement and combination of mechanical devices set forth and described in the above specification, constituting a machine to be used for the purposes and in the manner set forth, viz,, platform D, with revolving cutters shaped and operating as described, crown saw O, with the arms, d d, and the adjustable platform and cutter wheels, K and M, with their cutters, substantially as set forth in the specifications and drawings.

HYDRANT—G. P. Perrine and J. E. Boyle, of Richmond, Va.: We claim the hollow piston rod and nozzle when so constructed and arranged in combination with cylinders of unequal diameters, and their corresponding pistons or plungers, that they will be elevated by the pressure of the water from the supply pipe upon the under surface of the piston, p, and the water withdrawn therefrom for the purpose specified.

SHIPS' WINDLASSES—J. Peevy and Abraham Sanborn, of Bangor, Me.; We disclaim the mere placing of the pawls above and below the fulcrum of the lever.

But we claim the attachment of the pawls to the slides a a', operated as and for the purpose specified.

STRAIGHTENING KNIFE BLADES—H. Pierce, of Claremont, N. H.: I do not claim the device for raising and dropping the weight, and I do not wish to confine myself to the rendering of the upper die only adjustable, as that may be permanent, and the lower die self-accommodating to the tapering form of the blade, or both dies may be made adjustable.

But I claim the employment. in conjunction with a drop weight of self-adjusting dies, in the manner and for the purpose set forth.

ENAMELING IRON PIPES AND HOLLOW WARE—Edward Pierce, of Philadelphia.: I claim the enameling of the interior surfaces of pipes or cast iron ware by placing a vitrifiable compound on the core before the core is inserted into the mold, in the manner and substantially as described.

SAFETY STEAM BOILERS—W. G. Pike and Isaac R. Scott, of Waltham, Mass: We do not claim regulating the intensity of furnace fires by closing the dampers in the draft and smoke pipes by means of a float within a water chamber.

But we do claim the described arrangement of the bent mercury tube, D, with its float and the parts immediately connected therewith and the steam pipe, f, whereby the pressure within the boiler is indicated to the eye, the dampers are regulated to suit the pressure required, and when the pressure within the boiler becomes excessive, the fire is extinguished by the escaping steam, thereby forming a safety regulating apparatus not requiring the supervision of the attendant.

LIGHTING STREET GAS—John Reese and Chas. N. Tyler, of Washington, D. C.: We claim the gas lighter described, consisting of the sliding shade, D, spring E, and guard, e, arranged and operating in the manner and for the purposes set forth.

HARDENING AXES, &c.—J. N. Rockwell, of Napanock, N. Y: I do not claim broadly the hardening of axes or other tools by admitting a stream of water upon their surfaces, as such methods have been long known.

I claim in ax tempering devices, providing the box or holder B, in which the ax is placed with one or more valves, b b, arranged and operating substantially as described.

[The ordinary process of hardening axes by plunging them in a highly heated condition into cold water causes some of the water to assume the spheroidal state on the surface of the metal, which prevents it from equal and sudden cooling, thereby causing soft spots in it. The object of this improvement is to obviate this difficulty. The heated ax to be hardened is confined in a close box having one or more valves; this box is lowered into a tank of water to a certain depth; the valves are suddenly opened, and the water rushes in, cooling all parts of the metal suddenly. This is a good improvement, and applicable to various tools.]

CANDLESTICKS—Timothy Rose, of Courtlandville, N. Y.: I claim, first, Making the socket of the candlestick and the sliding cup within it of greater diameter than the candle intended to be used therein, for the purpose set forth.

Second, I claim the spur in the bottom of the cup combined with the stays on the inside of the top rims for the purpose of holding the candle in proper position, having space around it for the melted tallow to pass down into the cup, substantially as described.

SECURING AND ADJUSTING PLANE IRONS IN THEIR STOCKS—Wm. Stoddard, of Lowell, Mass.: I claim the grooved stand, I, double headed bolt, H, in combination with the cam, A, and its stand, C, for the purposes set forth and described.

CLEANING RICE—John F. Taylor, of Charleston, S. C.: I do not claim separately the screw, F, for that has been previously used.

Neither do I claim the peculiar form of the vessel, A, for both have been previously used for the same or analogous purposes.

I claim the screw, F, and cylinder, G, placed on the rotating shaft, C, in combination with the spiral projections or ledges, b, formed on the plate, E, and placed at the bottom of the vessel, A, the whole being arranged so as to operate conjointly, as and for the purpose set forth.

[Under the outer husks, rice has a coarse floury coating, which has to be removed to clean it perfectly. Heretofore this has been done by beetling it in mortars—a slow operation—by which the grains are liable to be bruised and broken. This invention consists in giving motion, by means of a screw cylinder, to a quantity of rice placed in a proper formed vessel, whereby the kernels are made to rub against one another, and are thus rapidly cleaned, without breaking them.]

CALIGRAPHS—Chas. Thurber, of Worcester, Mass.: I do not wish to be understood as making claim broadly to the combination of two pens or markers by levers of equal length and jointed rods, and these features combined with a table or desk by universal joints, as such combination has long been known and used in an instrument termed polygraph, for writing two exact copies simultaneously, and has been entirely superseded by the copying press for taking impression copies, and the mode of operation resulting from the said combination is substantially different from my invention, and could not produce the result for which my said invention was designed.

Nor do I wish to be understood as making claim to the combination of a stylus or tracer with a pen or marker by levers of different lengths connected by jointed rods, as such a combination has long been known and employed as a pantograph for copying drawings, so as to reproduce them on an enlarged or reduced scale, and could not alone achieve the purpose for which my invention is designed.

But I claim combining a stylus or tracer with a pen or marker, by means of levers of different lengths, connected by jointed rods, substantially as described, that the pen or marker may follow accurately, but on a reduced scale all the movements imparted to the stylus or tracer, in combination with the connection of this mechanism with a desk or table, by means of an universal joint, substantially as described, to give freedom of motion in all directions to the stylus or tracer and to the pen or marker, whereby a person can write the usual sized characters by tracing characters of a large size, as set forth.

I also claim the stylus or tracer, and the pen or marker combined, substantially as described, with the apparatus or its equivalent for shifting the paper, whereby the paper is shifted to the distance equal to the space between two lines, by carrying back the stylus or tracer preparatory to tracing another line, substantially as set forth.

STEAM BOILERS—Harry Whitaker, of Buffalo, N. Y. I do not claim generally surrounding the fire by a water jacket. An example may be seen in E. Andrus' withdrawn application May 27, 1850.

Nor do I claim annular fire chambers in boilers.

Nor do I claim, irrespective of the arrangement I have described, the employment of ascending and descending fire flues. Examples of such flues may be seen in the withdrawn applications of Thomas Greer, Oct., 1847, and Thomas E. Warren, July 19, 1852; but the arrangement of flues and parts therewith connected, in the above examples is quite different from mine.

I claim the arrangement in an upright cylindrical boiler of an annular fire chamber, P, a series of descending fire tubes, F F, a smoke box, Q, and a series of ascending fire tubes, H H, substantially as described, to convey the products of combustion from an external fire through the center of the boiler.

[The object of this improvement in steam boilers is to obtain a very large amount of heating surface with a small body of water, and a proper circulation of the water, so that no part subjected to a high heat shall be left uncovered with water.]

PREPARING INDIA RUBBER CLOTH—Chas. Winslow, of Lynn, Mass.: I claim the method of preparing elastic cloth for use by the application thereto of parallel lines in the direction of the shortest diagonal of the meshes formed by the threads of the cloth.

EXCAVATING TUNNELS—Chas. Wilson, of Springfield, Mass.: I do not claim a single set of one or more rotary disk cutters applied to a common revolving shaft, and made to pass across a stone, and to take a succession of chips or cuts from it, essentially as represented and described.

I do not claim the drill, W' Y' Y', as the same might be used by hand, or in any other machine, and becomes a separate invention, that may hereafter be secured by Letters Patent.

I claim first, Forming grooves in stone or other mineral substance by means of rolling disk cutters on axis, set in alternate opposite directions, and acting substantially as and for the purposes specified.

Second, I claim arranging a series of rolling disk cutters revolving in such a manner as to cut a deep annular groove into the rock, substantially as specified.

Third, I claim the arrangement of the scoops, A2, and buckets, B2, in combination with the cylindrical wheel, I, and rotary cutters, to free the annular groove of the chips and dirt abraded by said cutters, substantially as and for the purposes specified.

Fourth, I claim a bed plate secured in place by the jack screws, L2 M2, or their equivalents, in combination with a sliding frame, or its equivalent, projected as the cutting progresses by means of a screw acting the fixed and moving parts, substantially as and for the purposes specified.

BACKGROUND FOR PHOTOGRAPHS ON GLASS—J. W. Wykes, of Wheeling, Va.: I do not claim the blacking of the glass behind the image.

Neither do I claim the reflecting background, such being well known.

But I claim the application of the described enamel to collodion and albumen pictures on glass, substantially in the manner and for the purposes specified.

ATTACHING AIR CHAMBERS TO PUMPS—Charles N. Lewis, (assignor to Geo. C. King,) of Seneca Falls, N. Y.: I do not claim arranging the air chamber, C, so that it may be turned on the cylinder, and the spout, D, brought in any desired position, for that has been previously done.

But I claim connecting the air chamber, C, with the cylinder, A, by means of the stuffing box G, and follower H, applied to the pump, and arranged relatively with the several parts as shown and described, for the purpose set forth.

[This improvement relates to single-acting cast iron pumps with air chambers, whereby their construction is greatly simplified. The parts are so made relatively that by screwing the follower in the stuffing box, the air chamber is fastened to the cylinder and the spout turned in any direction.]

WATER METER—Peter H. Niles, (assignor to himself and Alfred Douglass, Jr.,) of Boston, Mass.: I claim the two pistons operating in a single cylinder, in the manner substantially as set forth, in combination with the differential piston as described.

Second, I claim the air chamber, F, between the pistons, C C', operating in the manner substantially as set forth.

Third, I claim float valve, w, in combination with the two-way-cock, U, whereby, when the water is shut off, all the chambers of the meter are emptied, as set forth.

BREECH-LOADING FIREARM—Gilbert Smith, of Buttermilk Falls, N. Y.: I do not claim generally the packing of the joint between the barrel and the breech-loading fire arms, by the expansion or other action of a portion of a cartridge consequent upon the explosion of the charge, as I am aware that the butt or rear portion of the cartridge has been used to pack the joint in that way when the said joint has been made at the extreme rear of the chamber and close to the face of the breech.

Neither do I claim generally the retention of the cartridge case in the chamber until after the discharge.

But I claim making the chamber to receive the charge in the form of a cartridge partly in the barrel and partly in the breech, and so much larger than the general bore of the barrel as to have a shoulder in front to retain the cartridge case thereon till after the discharge, whereby the joint between the breech and the barrel is brought near the middle of the chamber, and not in a corner at the extreme rear or in front thereof, and is caused to be packed by the lateral expansion of an elastic cartridge case.

And though I do not claim the clamping lever represented, for securing the barrel to the breech, I claim furnishing the said clamping lever with a projection, l, so arranged as to be acted upon by the hammer in the act of cocking the latter, for the purpose of insuring locking the breech and barrel together before the discharge, and effecting the operation of cocking the hammer and locking the breech and barrel by one movement.

I further claim the sight, m, constructed with a round stem, n, flattened on one side, and having a spring, p, applied to it, substantially as described, for the purpose of enabling it to be adjusted and secured at various elevations, as set forth.

[It is difficult to construct breech-loading firearms so as to make the breech joint tight; after a few shots the joint is liable to leak. This improvement provides a cartridge case, which serves as a packing to keep the breech joint always tight when the charge is exploded. A device is also employed which insures the locking of the barrel and breech together at the time of discharge.]

TAPS AND DIES FOR CUTTING SCREWS—Ira A. Richards, (assignor to Silas Stevens,) of East Brookfield, Mass: I claim first, Cutting away the toeth of taps and dies on one side, substantially as and for the purposes set forth.

Second, Making the opposite scores, which are parallel with the slides in which the two parts of a die work, or at right angles to the partition of the die, both on the same side of the line drawn through the center of the die, substantially as and for the purposes set forth.

[This invention consists in cutting away every tooth of a tap or die on one side, or cutting away the successive teeth on opposite sides alternately, by which means each tooth cuts on one side only, clears itself better, and in cutting screws the stripping of the thread is prevented, should the dies continue to be turned after a full thread is obtained. By forming the opposite scores of a two part die, as set forth in the second claim, the die cuts the bolt much easier in the screwing operation.]

STEAM WHISTLES—Sylvester W. Warren, (assignor to himself and Dexter N. Force,) of Brooklyn, N. Y.: I claim the cap, d, and whistling mouth or mouths, e, connected to the steam pipe, substantially as specified.

I also claim placing two or more whistling mouths or edges in the whistle at different distances from the orifices, for the escape of steam, so as to adapt one whistle to different pressures, without changing the position of any of the parts, substantially as specified.

BENCH PLANE—Thos. D. Worrall, of Lowell, Mass., (assignor to Thos. F. Caldicott, of Charlestown, Mass.: I claim the improved manufacture of carpenters' bench plane or jointer, as made with its handle, its wooden stock to which said handle is affixed, and a separate metallic cutter holder and cutter clamping devices arranged together, substantially as specified.

CYLINDRICAL THROTTLE VALVES—James H. Simmons, of Erwin, N. Y.: I claim the arrangement of the latch, h, upon the stem of the valve, playing in the recess, k, within the interior of the head of the cylinder as set forth.

BORING MILLS—Wm. Sellers, of Philadelphia, Pa.: I claim revolving the face plate of boring or turning mills in a support, as near as convenient to the periphery thereof, substantially as described.

I also claim the adjustable step or center bearing, when this is combined with an outer support, substantially as described.

BREECH-LOADING FIREARMS—John Shcenkl, of Boston, Mass.: I claim first, The method described of stopping the hammer at half cock, by the pressure of the thumb, as set forth.

Second, I claim the bar, K, constructed as described, and operated by the pin, n, and lever, I, for the purpose of cocking the gun and of returning the barrel into line with the thimble, C, and locking it therewith, substantially as set forth.

ADDITIONAL IMPROVEMENTS.

SPOKE AND AX HELVE MACHINE—Owen Redmond, of Rochester, N. Y. Patented Oct. 30, 1855; I claim the jointed guides having slots, c d e, in combination with the slots having the relative position, as set forth.

SAWING MACHINE—Wm. P. Wood, of Washington, D. C. Patented Feb. 26, 1656. Re-issued March 25, 1856: I claim the vertical guides, D, and guide rollers, m and n, in combination with the swivel link saw bearings, I, arranged and operating in the manner set forth.

DESIGNS.

COAL COOKING STOVES—Conrad Harris and Paul W. Zoiner, of Cincinnati, O.

WOOD PARLOR STOVES—Conrad Harris and Paul W. Zoiner, of Cincinnati, O.

DINING ROOM STOVES—Conrad Harris and Paul W. Zoiner, of Cincinnati, O.

COOKING STOVES—S. W. Gibbs, of Albany, N. Y., (assignor to North, Chase & North, of Philadelphia, Pa.

STOVES—N. S. Vedder, of Troy, N. Y., (assignor to North, Chase & North, of Philadelphia, Pa.

STOVES—Jacob Beesley & E. J. Delaney, (assignors to Cresson, Stuart & Peterson,) of Philadelphia, Pa.

Enormous Gold Boulder Found.

The Marysville *Herald* says that the Downieville Tunnel Co., at Centerville, have found the largest boulder containing gold perhaps ever struck in California. Up to last accounts they had extracted $17,000, and had not yet ascertained its full value. They estimate the amount of gold it contains at not less than $100,000. This boulder is a fair set-off to one from Australia, which the English papers have recently mentioned as being on exhibition in London, and which weighs—quartz and gold—four hundred pounds, and is valued by some sanguine individual at $100,000. It is very rich in gold, but not near so large as the one found at Centerville.

Antidote to Mosquitoes.

A certain preventive to attacks of mosquitoes, black flies, &c., is said io be: glycerine 4 ounces, oil of peppermint 2 1-2 drachms, oil of turpentine 4 drachms. The face, neck, hands, in fact, all parts exposed, to be rubbed with the mixture. This was given me by an eminent American physician, previous to going into the State of Maine on a hunting expedition. I never knew it used without perfect success.—*Correspondence of Philadelphia Ledger.*

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Preserving Meat and Fish with Pyroligneous Acid.

MESSRS. EDITORS—In *Harper's Weekly* for the 20th ult. I observed the following paragraph under the heading of "Domestic Intelligence":—

"The Secretary of War and the Chiefs of the Bureaus attended, last week, a very interesting and successful experiment, made at the War Department, by Mons. J. B. Richer, formerly of the French army. M. Richer is the inventor of a process to restore putrid meats or fish to a perfectly sound and healthy state. The experiment was tried on a putrid beefsteak and a shad, which were at first so offensive that one could hardly stay in the room. By a hocus-pocus preparation, and sousing the beef and fish in a bucket of water, they came out perfectly fresh. M. Richer, who has made this discovery in New York proposes to sell his invention to our government, and to France and England. For our ships of war and our army it might be of great service when provisions become spoiled and none other was to be had. At Sevastopol, it is said, 17,000 men died of cholera from eating spoiled meat."

Although I may be mistaken, it appears to me that this invention of M. Richer consists in the use of pyroligneous acid, or as it was once called, "acid spirit of wood." However it may be, it is well known that this acid has the same properties as the above mentioned discovery, and the *modus operandi* equally as simple.

It was Monge who originally discovered that pyroligneous acid possessed not only the property of impeding the putrefaction of animal substances, but also of returning such substances to their original freshness *after* decomposition or putrefaction. Mr. William Dinsdale, of Colchester, Eng., made an unsuccessful proposal to the Lords of the Admiralty to apply this acid to preserve animal food for the use of the navy in any climate, however warm it may be.

Meat can be preserved any length of time by merely plunging it in pyroligneous acid for a few moments, and drying it in the shade. This effect is partly ascribed to the empyreumatic oil or tar contained in the liquid, and this would account for the use of smoke for preserving hams, fish, tongues, &c., as pyroligneous acid is obtained by the destructive distillation of wood. The harder woods, such as oak, beech, ash, and birch are used.

Dr. Jarg, of Leipsic, has made numerous experiments with this acid, and recovered quite a number of anatomical preparations from incipient corruption by simply pouring it over them. By smearing pieces of flesh (already in a state of corruption) with empyreumatic oil or tar, he succeeded in restoring them dry and sound. Vauquelin proved that this acid was simply an acetic contamination with empyreumatic oil and bitumen

Pyroligneous acid is a brown transparent vinegar, and has a strong smell. Its acid powers are said to be superior to those of the best wine or malt vinegar, in the proportion of three to two. It has been in use with calico printers for a long time.

By perusing an article on this acid in Pilkington's Mechanics' Own Book, I was led to make several experiments with a view to test the truth of its property of preserving flesh from putrefaction, and the result of my experiments was to prove it beyond doubt.

Whether pyroligneous acid is the basis of M. Richer's invention or not, it is well worth the attention of government, and I believe that any enterprising man would do well to invest a moderate capital in such a business with a view of furnishing our merchant seamen with so necessary an article as fresh meat, especially during long voyages and in warm climates. GEO. W. BANCROFT.

Providence, R. I., June, 1857.

[We have witnessed a number of experiments with tainted meat, in order to restore it to an agreeable flavor, but none of them were fully successful. We have seen tainted pork and beef boiled in water containing wood charcoal, also in water containing some wood vinegar; but while the process did render some specimens that were very slightly decayed fit to be eaten in the war camp, when horse flesh is at a premium, we never saw a single specimen that had proceeded in decay as far as those described in *Harper's* that was fit for use. It is our opinion that the value of Mr. Richer's process, as described, is greatly exaggerated. The preservation of meat by the use of wood vinegar, as described by our correspondent, Mr. Bancroft, deserves attention. The smoking of meat is an antiseptic process, in which the crude pyroligneous acid in the smoke plays a similar part to the liquid acid, but in our climate it does not prevent exposed meat from decaying; the use of the liquid acid, instead of the gas in smoke, may be more effectual.

(For the Scientific American.)

Ants.—Their Senses and Habits.

"Go to the ant, thou sluggard," is advice not only against sluggishness, but is applicable to other things, particularly as it relates to what may be accomplished by the combination of individuals under great disadvantages.

The only medium which ants possess for acquiring and imparting information appears to be their antennæ, or feelers, having neither of the two most useful senses for learning which larger animals possess—seeing nor hearing—and if they have the sense of smelling it is very limited. I have placed sugar within half an inch of their trail to a sugar barrel, and they would pass without noticing it until one of them accidentally strayed within touch of it, when others would soon follow by feeling their way. I have placed a thin strip of wood not wider than the length of an ant, across their trail, and it embarrassed them; they would turn towards each end of it and return, until some bold fellow ventured across it, when the rest followed. I caught a number of them on a chip with sugar on it, placed near their trail, and gently removed it to the opposite side, about a foot off; when they finished their repast they went feeling around in every direction, and often returned even when they had got within two inches of the great thoroughfare where the multitude was passing; they neither saw nor heard them; but as soon as they struck the trail they took the homeward course, and ceased to return.

The above experiments were made with the small red ants. When they first discovered the sugar those returning from it would extend their antennæ to those they met, make one or two short jumps, and the latter would quicken their pace, as if satisfied with the information.

Whenever ants discover the trail of another tribe in rather suspicious proximity to their own dwellings, if they are of equal size with themselves, they sally out in a body to attack them; but if they are a size or two smaller—the very small ones they never notice—one or two guards take possession of the trail, and cross and recross it with the most unwearied diligence for hours and days together, and wo to all they catch. But scores will pass within one or two inches of a guard without either being aware of the others' presence.

Notwithstanding the want of these senses a community of large ants will explore an area of ten to fifteen acres, and if one of them makes a discovery of food, intelligence of it will be circulated so rapidly that they will form a trail to it in one night, though it be one hundred and fifty yards off. Their sense of feeling is extremely delicate, for by it they can spread an alarm, distinguish a friend from a foe, follow a trail over a smooth floor, and convey any intelligence which may be necessary for them to know. In their wars they are very destructive, and this appears to be a provision of nature to prevent their increase. Two ants of about equal size will fight to the death without yielding. In a regular battle between two tribes it is their custom to carry off the dead and wounded from the field.

H. POLLARD.

Lexington, Mo., June, 1857.

[Of all insects, ants seem to have the most perfect powers of communicating with each other, yet they emit no sound, like bees, but only use signs and motions, employing their attenæ for such purposes; and, as our correspondent states, if they have the power of vision, it must be very feeble. Still, "if they see not" it is not for want of eyes—these they possess.

New Motive Agent.

The Baltimore *Patriot* contains an account of the operation—said to be very successful—of an engine propelled by gas generated from bi-sulphuret of carbon and some other ingredients submitted to heat in a boiler. The *Patriot* says:—

"We called yesterday afternoon, much to our gratification, and saw the engine in full, successful operation, where it has been working without intermission several days, in Cypress alley, between Pratt and Lombard streets. The engine being merely a model or experimental one has, of course, some imperfections and may be greatly improved, but it worked with remarkable precision and regularity. It is calculated for four-horse power, being a common rectilineal or reciprocating steam engine, differing in no material feature from those in general use. The patent novelty consists in the motive power and its application, which wholly supersedes steam. This motor is produced by a compound of de sulphurated bi-sulphuret of carbon, coal tar, and volatile or fixed oil, which, under certain influences of heat, becomes powerfully expansive, and thus gives momentum. Though only a four-horse engine, it was performing the estimated duty of ten horses, and has been so doing since put into operation, nearly a a fortnight ago."

After the gas actuates the piston, it is exhausted into an outside or surface condenser, in which it is reduced into liquid condition, and is pumped back into the boiler, being used over and over again. It is the invention of J. C. fr. Salomon, who has devoted years of study and labor in making experiments with gas engines.

Preserving American Grain.

The results of some experiments made in France in the preservation of grain have but very recently been published. A year ago, exactly 2175 bushels of American wheat were, by way of trial, enclosed in two *silos* of sheet iron—large cylinders sunk into the ground—and were carefully closed, sealed and covered.

The seals were removed in the first week of last month in presence of two delegates from the War Office, and of several members of the Commission for Military Stores. The grain was then subjected to a strict examination, and unanimously declared to be exactly the same as it was when sealed up. The cost of preserving corn by means of these silos does not exceed 16 cents per 2 3-4 bushels, while all danger of loss by fire or vermin is entirely obviated.

Notes on Science and Foreign Inventions.

A TUNNEL BORING MACHINE.—A new steam boring machine for tunnelling through rock has been invented and put into operation by Captain Penrice, of the Royal Engineers, England. It consists of a strong cross head of wrought iron, secured to the outer extremity of the piston road of a horizontal steam engine, and on this cross head there are twenty-four short arms studded with diamond-pointed steel cutters. By the forward stroke of the piston these cutters strike against the rock, and by a self-acting device are then partially rotated, and the piston returns; on the succeeding stroke or blow, the cutters strike a new part of the rock, and so on bore into the rock by an intermittant rotary motion of repeated blows, similar to that given to the chisel in rock drilling by hand. The steam cylinder is so managed as to keep a cushion of steam behind the return movement of the piston. On the forward motion, the mass is stopped by the blow on the rock and a recoil takes place, a differential pressure of steam is then brought to bear upon the reverse face of the piston, and the moving mass is thus to a certain extent balanced between two steam cushions. The engine is secured on a truck, and moves forward to its work on rails. An experimental machine has cut its way into sandstone rock at the rate of twenty inches per hour, making a hole five feet in diameter. An English engineer is having one constructed to complete a contract in tunnellin through the Alps. In its construction and operation it differs from Wilson's American tunnelling machine, which cuts into the rock by a series of rotating cutters, and is not subject to the violent concussions attendant on this English one.

THE MEDITERRANEAN SUBMARINE TELEGRAPH.—An attempt to join Europe with Africa by a telegraph across the Mediterranean was made a short time ago, and as our readers will remember failed either from a lack of sufficient cable at the start, or from its having been laid in wavy lines. The steamer laying it was compelled to stop, and hold the end in deep water for four days, while its attendant steamer was hurrying up a fresh supply. The steamer holding on paddled slowly against the wind or current to relieve the delicate cable as much as possible from strain, but after remaining as nearly stationary as possible for four days and nights, keeping up a constant communication by telegraph with the manufacturers in England, the cable parted, and the whole investment was lost. But this accident has not been allowed to defeat the enterprise; another cable is now being made, which is 920 miles long, and is to be completed on the 30th of October. Before that period arrives, we hope the Atlantic cable will have been successfully laid, and that messages will be flying along it under the waters of "the great deep."

COBALT WIRE.—In an article in *Comptes Rendus*, by M. Sainte Claire Deville, he says: "Cobalt is a metal, the most ductile and certainly the most tenacious known. A wire made of it will support twice the weight of one made of iron."

ELECTRIC CLOCKS.—A paper was recently read on this subject before the Royal Scottish Society of Arts, by Mr. Henry Kerr, watchmaker, Edinburgh, who exhibited an improved electric clock in action, and explained why such clocks, although they had been made to operate well for a short period, yet as a whole, had hitherto proven failures. This was attributed to the want of a proper mode of breaking and closing the electric circuit, in order to secure permanent action. The improvements in the clock he exhibited were stated to consist in there being a secure electric contact made, withont friction, between the conducting surfaces; in the pendulum being impelled by a lever acting upon it without friction, by the simple force of its gravity; in the pendulum not acting directly upon the contact spring, but by the intervention of a delicate lever; in the pendulum being free as it approaches the extremity of its arc of vibration, and during a large part of it; and in the uniform nature of the resistance which the pendulum has to encounter in the making and breaking of the electric circuit.

NEW ELECTRIC LIGHT.—In a letter to the editor of the Paris *Cosmos*, Professor Tyndall says, "Mr. Faraday, I am happy to say, is quite well; he has made known to me a new application of magneto-electricity—the electricity generated by electro-magnetic machines. It consists in the production of electric light which is truly splendid, and which can be immediately employed for illuminating lighthouses."

WONDERFUL DISCOVERIES.—At the meeting of the French Academy of Sciences, on the 25th of May, M. Elie De Beaumont announced the following novelties; viz., a method of reproducing animal life; a complete solution of the problem of aerial navigation; a project for a universal language; and the discovery of the cause, nature, and an infallible cure for cholera! M. E. de B. is great on the impossible.

AN ANTIQUE STEAMBOAT ENGINE.—An engine employed in 1788 to propel a boat at Dalswinton, Scotland, has lately been placed in the museum of the British Patent Office, through the exertions of Mr. Bennett Woodcroft, Superintendent of Specifications. It has two cylinders, four inches in diameter each, and the valves are operated and closed by the old hand gear. It was applied to a double boat in the year mentioned, the paddle wheel of which was placed in the center, and it attained to a speed of five miles per hour.

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New Inventions.

Ports of Steam Engines.

J. P. Joule, F.R.S., suggests that it would be very desirable to abandon the practice of using the same port for both the induction and eduction of the steam to and from the cylinder, since by this method the temperature of the exhaust steam is raised by coming in contact with metal which was the instant before heated by the induction steam, and the induction steam is cooled by contact with metal which has just before been exposed to the exhaust steam. No doubt a loss of elegance and compactness would result from employing separate ports, but this would be far overbalanced by the real advantages gained.—*London Mechanics' Magazine.*

New Leveling Scraper.

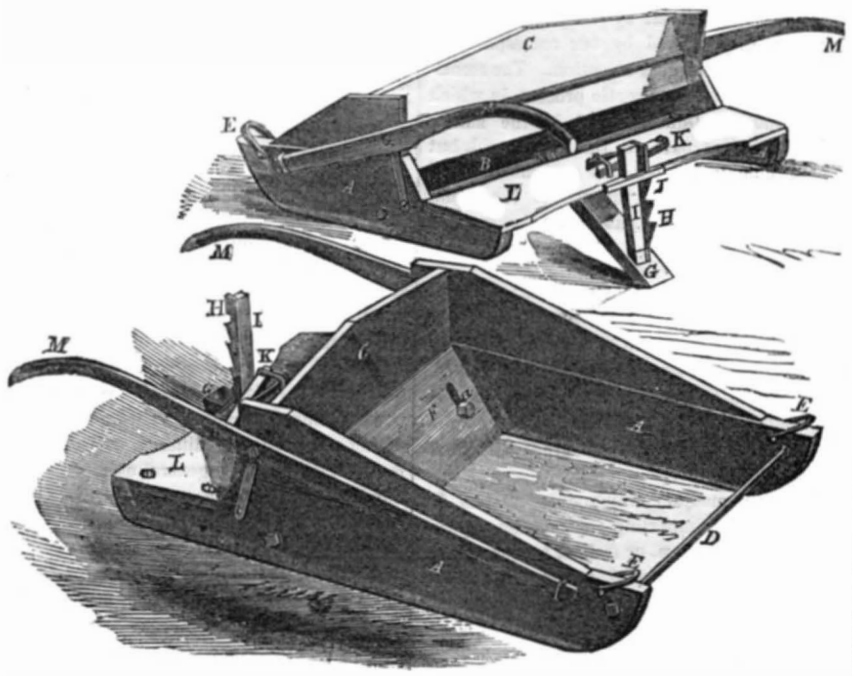
Chauncey Blakeslee, of Ashtabula, Ohio, is the inventor of the valuable labor-saving device of which two views are given in the accompanying engraving. It is designed to operate on roads, lawns, or in any situations where grading alone is the effect to be produced. It may be used with good effect in leveling and rendering more equable the surface of snow when a path has, as is frequently the case, assumed the character of two deep channels with a hard ridge between them, or when a road has become worn in transverse wave-like ridges or cradle holes. Its operation is very similar to the ordinary scraper, except that it is perfectly self-acting in the labor of receiving and discharging the dirt; and although handles, M, are provided, as represented, to facilitate any manipulation of the implement desired, the draft of the animals is applied at a point so far forward of the edge of the scraper that no strain is thrown upon the hand under any circumstances, thus avoiding the propensity of the common road scraper, to throw the operator over it when it meets with an obstruction.

A represents the runners or sides of the scrapers, the lower edges of which are shod with stout iron, to resist the wear upon the earth. B represents an inclined back, which carries, by the aid of bolts, *a*, the stout metallic plate, F, which is the scraper proper. The bolts, *a*, are inserted through slots, as represented, so that F may be shifted down upon B as its lower edge wears away. C is a board standing perpendicularly or inclined forward above B, to prevent the accumulated earth from falling over the upper edge of B. D is a cross brace, and E E are simply clevices to which the animal or animals are attached. G is a kind of gage turning upon a transverse bolt represented near B. The duty of G is to elevate the rear end of the whole scraper to any extent desired, so that the implement shall be supported upon but three points—two near the forward end of the runners, A, and the third at the rear extremity of G. The letters H I J and K represent the means employed for fixing G in any position desired. I is an arm attached to G, and H is a kind of metallic rack fixed on I. J is a stout metallic cross piece, and K is simply a spring which urges I into close contact with J. Supporting the weight of the hinder part of the scraper by the hand and compressing K, the rack, H—and consequently the gage lever, G—may be changed to any position desired.

Supposing the plate or scraper, F, to project a certain distance below the bottoms of the runners, A, it is easy to find by trial such a position of the gage lever, G, that when on level ground the lower edge of F will be nearly or quite in contact with the earth. This is the ordinary position for work, but it must be somewhat varied to adapt it to different circumstances. Whenever the implement passes over an uneven surface the scraper, F, digs off the elevated parts, and drops the material thus removed in the first depression which presents itself. It would probably be very efficient in leveling or extinguishing the deep "ruts" or wheel tracks which are always found in most roads, as by properly setting G the plate F would be made to carry constantly before it a slight accumulation of earth, which would effectually fill the rut; and a few repetitions of the operation, allowing the soft earth to be well compacted therein after each attempt, would soon entirely obliterate even the most desperately deep and cruel channels of this kind, and make the road smooth and uniform.

There are many other uses to which the device may be profitably applied, such as

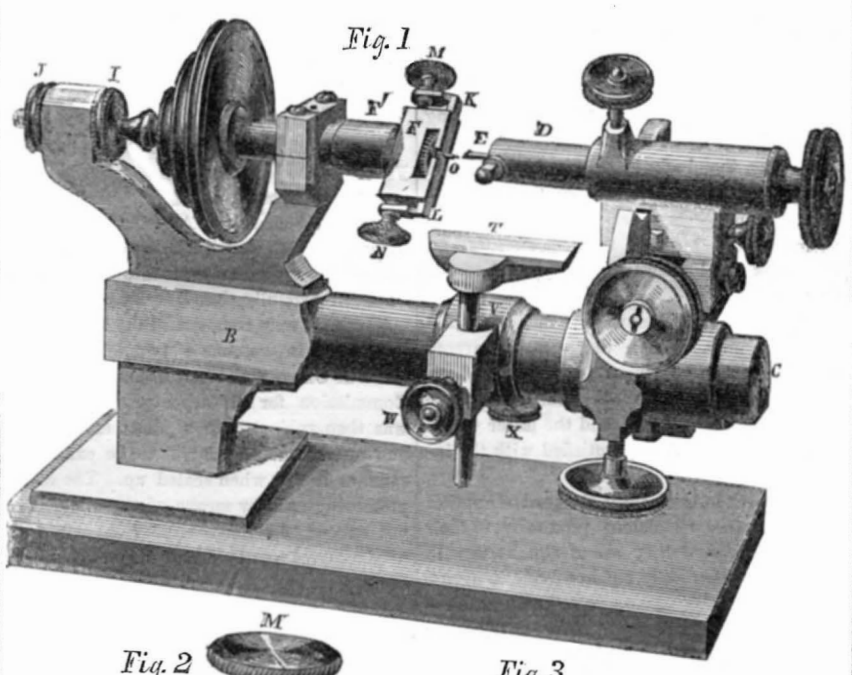
BLAKESLEE'S LEVELING SCRAPER.



leveling mowing land preparatory to rolling, etc. For some, perhaps for most, purposes. it is desirable to give a curved outline to the lower edge of F, so that the shallow channel excavated shall have in no case any perpendicular sides. The implement seems very durable and simple, and little liable to get out of order.

Any further information relating thereto may be obtained by addressing the inventor, C. Blakeslee, Ashtabula, Ashtabula county, Ohio.

STEPHENS' LATHE FOR JEWELERS.



The accompanying engraving represents a lathe for jewellers and watchmakers, which is the subject of two patents granted to Mr. Wm. Stephens, of Richmond, Ind. The first, granted on Feb. 20, 1855, is for the peculiar and admirable slide rest seen on the right in Fig. 1, and which having been quite fully presented on page 233 of Vol. 10, SCIENTIFIC AMERICAN, need not be again dissected. The later invention, a chuck for holding small work, patented March 10 of the present year, is the subject more particularly before us.

The headstock or upright, B, supports the cylindrical spur or projection, C, which extends horizontally therefrom and carries the small cutter or tool, E, in the cylindrical bar, D, the position and motion of which latter is perfectly controlled by the devices intervening between D and C. F is the head or acting portion of the chuck, and F′ is a cylindrical stem containing a hollow or female screw, F″, (see fig. 2,) by which it is attached to the ordinary arbor or mandrel. G represents a slot in F of sufficient size to accommodate any wheel which may be on the pivot to be finished. H is a small "back center" fitting tightly in a corresponding hole bored precisely in the central line or axis of motion. The front end of this small center is hollowed out in the form of a hollow cone, so that any shaft or pivot pressed into the cavity necessarily assumes an exactly central position. This center, H, may be moved backward or forward to accommodate various lengths of pivot to be turned, but fits suffiently tight in F′, to be retained by friction in any position where it may be placed. K and L are accurately finished bars, fitting in dovetail grooves across the face of F, and made to slide therein by turning the screws M and N. The ends of these are finished each with a small notch, so that the slides K and L clamp and confine very firmly the pivot near its front end, and allow of its being adjusted with great accuracy. In Figs. 1 and 2, a pivot, O, is shown mounted with its projecting end ready to be turned and with a wheel and pinion standing untouched in the opening G. T represents an ordinary hand rest, V, a support therefor, and W and X pinching screws, by slackening which the position of T may be adjusted.

Fig. 3 represents a face plate to take the place of F when any larger work is to be either turned or drilled. S S S represent clamps, by properly adjusting which the work may be firmly held in any desired position on the face plate, either concentric or excentric to the periphery thereof.

As a whole the lathe is very simple, convenient, and admirably adapted to the wants of a very large class of operators. The advantages to be derived from this firm and easily adjusted apparatus, over any of the methods of fixing with cement, must be obvious at a glance.

For further information address the agent, Mr. G. M. Bodine, No. 22 Maiden lane, New York.

The American Nautilus in England.

The American Nautilus, or submarine diving machine, invented by Major Sears, is now at work in London, and a company has been formed to operate with this apparatus. A short time since, a number of scientific gentlemen and engineers were invited to see the Nautilus in operation at the Victoria docks. After the experiments were completed, a repast was given to those present, on which occasion Robert Stephenson, C. E., M. P., made a brief speech, which is not a little flattering to the inventive genius of our countrymen. He stated, that by a careful examination, it appeared to him to possess so many qualifications as a diving bell, (a machine hitherto very confined in its practical operations,) that it might truly be called *a universal diving bell.* It appeared to him to combine the highest class of mechanical skill, with great ingenuity in detail.

Mr. Bidder, the engineer of the Victoria docks, stated that great difficulty had been experienced at these works in operating with the diving bell, but when the Nautilus was applied, the amount of labor which had previously required three weeks and four days for its execution, was performed in two days and two hours with the same number of men. He also stated, that from his own personal experience in the Nautilus, he was convinced that nearly the same amount of masonry could be done under water as on dry land.

The Nautilus in London was constructed under the superintendence of Mr. J. N. Williamson, an American engineer, who is in charge of it, and whose mechanical skill has been signally displayed in all its arrangements.

The Longest Iron Viaduct in the World.

An immense iron bridge has recently been constructed over the river Ebbw, on the line of the Newport, Abergavenny and Hereford Railway, in England. Its hight is 200 feet, and beneath it runs the river and the track of the Monmouthshire Railroad. It consists of ten spans, each 150 feet long, of hollow wrought iron girders, supported on tall iron columns. With the approaches, the length of this bridge is 1760 feet.

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Scientific American.

NEW YORK, JULY 4, 1857.

Iron Improvements.—Kelly versus Bessemer.

Our readers will remember the great excitement that was created when the account of what was called the "Bessemer process" of treating iron was given to the world. We published a description of this process in the first and second numbers of our present volume; and we were then of opinion that Henry Bessemer, of London, was the first inventor of it. But very soon afterwards we were placed in possession of information which convinced us that J. G. Martien, of Newark, N. J., was a prior inventor to Mr. Bessemer, and we stated the grounds we had for entertaining such an opinion on page 21. Not long after that period, however, we received a communication from William Kelly, of the Suwanee Iron Works, Ky., which we published on page 43, in which he claimed priority over all others, as the inventor of this process, and he has at last proved his title to it. In our list of patent claims on another page of this number, it will be observed that he has been granted a patent, although one had been previously issued to Mr. Bessemer for the same invention. When Mr. Kelly's application for a patent came up before the Patent Office for examination, a patent was refused, of course; an interference was then declared, at his request, and the following document will show the action which flowed from it:—

"In the matter of interference between the patent of Henry Bessemer, of London, and the application of William Kelly, of Lyon county, Ky., for improvements in the manufacture of iron and steel, the hearing of which was fixed for the first Monday in April.

It appears that, by the concurrent testimony of numerous witnesses, Kelly made this invention, and showed it by drawings and experiments as early as 1847, and this testimony appears to be reliable in every respect.

The patent of Bessemer was sealed at London on the 11th of April, 1856, and bears date the 11th of October, 1855.

Priority of invention in this case is awarded to said Kelly, and it is ordered that a patent be issued accordingly, unless an appeal be taken within sixty days from this date."

S. T. SHUGERT, Acting Commissioner.

U. S. Patent Office,
April 13, 1857.

Thus the interference has been decided, and Henry Bessemer's American patent is of no more value to him than so much waste paper. According to our patent law, patents are only granted to original inventors, therefore although a patent may have been issued to an inventor, a subsequent applicant who can prove priority to the same invention will be granted one also. The claims of these two patentees may afterwards be contested in any United States Court, but the *first* inventor will alone be sustained, and the court has the power of annulling the illegitimate patent. This feature of our patent law is oftentimes productive of great injury to inventors, as is evident in the above case. Mr. Bessemer, without the least knowledge of Mr. Kelly's experiments, applied for a patent; it was granted, as it should have been, the invention was *new* and useful, so far as the Patent Office was aware. But soon afterwards Mr. William Kelly applies for a patent for the same thing, he proves priority of invention, and a patent is granted to him, which action renders the patent of Bessemer—for which he paid a fee of $500 to the Patent Office—worthless. We certainly sympathize with him in this case, and blame Mr. Kelly for negligence in not securing his patent at a much earlier date. He should have applied for one either at the time or soon after he invented the process. Had he done so, and Mr. Bessemer had applied for a patent afterwards, ignorant of prior claims, and had been rejected, he at least could have withdrawn $333, that part of his patent fee allowed by law to be refunded in case of a rejection—now he loses all. But if Mr. Kelly had obtained a patent in 1847, the probability is that a knowledge of his invention being thus rendered accessible, it would have prevented the great expense which subsequent inventors (like Mr. Bessemer) have incurred, not only in applying for a patent, but in making experiments. It is a duty which inventors owe to their brother inventors to apply for patents for their inventions as soon as possible, in order to prevent others incurring unnecessary expense in making experiments, as well as applying for patents. Perhaps they have never thought of this before; we hope they will not forget it hereafter.

Our patent law, we believe, ought to be reformed in that particular feature by which Mr. Bessemer's patent has been superseded. A certain fixed time should be allowed for an inventor to apply for a patent for his invention, and if he does not do so within that period, if his invention has been publicly used by himself, it should become public property, otherwise he should not be allowed to subvert a patent granted to another, who has taken proper measures to put the public in possession of the invention.

American Steam Plowing.

Our attention has been directed again to this subject by a letter from Obed Hussey, of Baltimore, Md., who has been so instrumental in bringing reaping machines into useful and practical operation, in which he informs us he has made two public successful trials with a steam plow, of his own invention. One of these trials took place at the cattle show of the State Agricultural Society of Maryland, held at Baltimore in 1855. The Committee of the Society appointed to witness the experiment, made a very favorable report, and he was awarded a first-class premium. Four large plows were drawn by the engine, several times across the grounds; and turned furrows, from seven to fourteen inches deep. In October, last year, he again exhibited his steam plow at the cattle show of the State Agricultural Society of Indiana, held at Indianopolis; and the Committee of that Society awarded him a silver cup and diploma. In this experiment, the engine drew six plows several times across a field of heavy sod, in the presence of a large number of spectators, who gave vent to their feelings of admiration by repeated cheers.

It seems that Mr. Hussey sent us reports of these two experiments, and he thinks we have not done him justice in stating as we have done, in a recent article, that we were not aware of a single such experiment having been made in our country. These reports never reached us, or we certainly would not have omitted to have given him due credit, had we been acquainted with the facts in the respective cases. We were perfectly well aware that a number of model steam plows had been made, but did not know that a single large working one had ever been operated.

His steam plow is now out on the prairies, but it, as yet, has only plowed about ten acres. The person who has charge of it has found great difficulty in arranging suitable plows to operate satisfactorily; but he believes it will yet be made to perform well, and as far as Mr. Hussey is able—with but feeble resources—he is determined to push forward in making further experiments.

In England and Scotland, steam plowing is no longer a problematical operation—it is a perfect success so far as the working of the plows is concerned—but as yet, it is not so cheap as plowing by horses. Unless such agricultural operations can be performed with steam cheaper than with animal power, of course, it cannot and will not be used. All the English steam plows yet constructed, appear to be too heavy and bulky; Boydell's, which is stated to be the most successful, weighs no less than ten tons; and the very lightest of which we have had any published accounts, is no less than five tons in weight. Such gross steam plows will never answer for America. As animal or horse power is cheaper in America than in England, the question naturally arises, if steam plowing cannot compete in that country with horse plowing, in point of economy, how can it do so in America? And if it cannot, what is the use of agitating the subject?

Our country is more favorable for steam plowing than England. There are hundreds of miles of fertile prairies, where steam plows can operate, without difficulty; whereas, in England, fields of uniform levels are small, "few and far between." Another point of encouragement is, this; the cost of steam plowing in England has been reduced over seventy-five per cent., within a few years, by improvements in the machines; it is now but a very little dearer than horse power; and there can be no doubt, we think, but it will soon be reduced, by further improvements, to cost much less. It would certainly be something to feel proud of, if some of our inventors were to produce *the* steam plow of the world, after so many experiments have been made on the other side of the Atlantic. They have done so with the reaping machine and the electric telegraph; European inventors were the first in time, but American inventors the *first* in *excellence!*

In this place, we take the opportunity to correct an opinion which seems to have become rather general, viz., that some person has offered a prize of $50 000 for the first successful American steam plow. No such prize has ever been offered. Mr. Bronson Murray, a farmer in Illinois, offered to subscribe $500 towards a prize of $50,000, for the first successful steam plow, and he called upon his brother farmers to join him in raising such a fund, but his call has not been responded to, and thus the matter stands at present.

A Great Engineers' Institution.

We have a great number of distinguished civil engineers in our country, but their reputation is *scrapular;* they exercise no united influence for the advancement of science, art, or useful enterprises. A few years since, an Institution of Civil Engineers was formed in this State; but after a feeble existence of only two years, we believe, it expired. If we take a look abroad, we will find the Institution of Civil Engineers in London, whose transactions are not only an honor to themselves, but worthy of imitation throughout the world. The members of it are high-toned and jealous of their personal honor as professional men; and they give encouragement to new and great enterprises, by their influence and contributions, and thus assist to bring many new and useful inventions into public use. Men of the highest scientific and mechanical attainments are proud of being connected with it, and they take a deep interest in making all its meetings attractive. Recently, as we find stated in the *London Engineer*, its members presented Chas. Manly—who had been secretary for eighteen years, and retired on account of his age—with a testimonial, which shows how *they do up things.* This consisted of a beautiful timepiece, a silver candelebra, and £2,000 (about $10,000) in cash. On the occasion, Mr. Manly stated that he had been a practical mechanic; earned his bread when a boy, by daily toil, and had afterwards arisen to merit the confidence of the ablest engineers in England, by making it a rule to be faithful, upright, and industrious in duty, and in the pursuit of knowledge to advance him in his profession.

At that meeting, success to the *Great Eastern* steamship was toasted, and J. Scott Russel, who was present, stated that he was proud of being its builder; and "the most remarkable feature," he said, "connected with it was, that a body of men should be found who would subscribe £700,000 (about three and a half millions of dollars) for an undertaking, the success of which was declared to be very problematical; but that feeling would probably be diminished when it was known that about three-fourths of the shares in the undertaking were held by members of the Institution of Civil Engineers."

This is a fact of which the public generally has been entirely ignorant, and it at once affords some idea of the wealth and influence of this association. To conceive of the members of a single society capable of subscribing $2,600,000 for the building of a steamship is a grand idea of itself. In view of this fact, no wonder J. Scott Russel could use the following language:—"The ship [*Great Eastern*] was a specimen of what the combined qualities of men could produce, and it impressed upon all beholders the advantages of such a union as the Institution afforded the means to encourage. United, they could do almost anything, and their efforts must benefit their country, and be conducive to their own good."

American Wines.

The American grape crop is becoming something of an institution in our country. In the Great West, especially in Ohio and Missouri, thousands of acres are set apart for the cultivation of the vine, and large quantities of wine are now manufactured annually. It has been demonstrated by numerous experiments that our native grapes produce wines fully as good as the best imported from abroad, and so well aware are the people of Ohio and Missouri of this fact, that most of them prefer their own to the best imported brands. No crop, we have been informed, yields a more profitable return for the care and labor expended upon it, than the grape.

One acre produces about four hundred gallons of juice, and the wine sells at a high price, the demand for it being greater than the supply. This very circumstance, however, has led to its adulteration in some cases, as liquids have been sold for the pure native juice of the grape which were but mixtures of logwood, caramel, and a little native wine, to impart its peculiar aroma to the whole. It is greatly to be regretted that any wine manufacturer should do such a thing; but for all this there are a number of Ohio brands much prized by those who have quaffed the juice of the grape in sunny France, on the banks of the Rhine and Douro. The brands of Mr. Yeatman, of Cincinnati, and some others, have a very high reputation in the market.

The soil and the climate of several of our States are very favorable for the cultivation of the grape, and we think that not many years hence, the importation of foreign wines will cease entirely.

In Missouri, a whole county is chiefly devoted to the raising of grapes, with the sole view of manufacturing them into wine; while a Company has been formed there, with a large capital, to manufacture, bottle, store, and sell it. The wine made in Missouri is quite equal to the best in Ohio. The vineyards around Cincinnati are extending rapidly every year; one horticulturist alone, as we learn from a contemporary, sold one million of cuttings the present season.

Whenever a plentiful supply of good pure native wine is obtained, it will supersede distilled and malted liquors—beverages which are now too commonly used.

Strychnine and Hogs.

A subscriber informs us by letter that he has used strychnine for poisoning wolves in the woods of Arkansas, and made numbers of them "bite the dust." His manner of using it was by inserting the poison in a piece of meat, and leaving it in the wolf trail. He has had undoubted evidence that hogs sometimes eat such poison baits, but it never, to his knowledge, did one of them any harm. He does not believe it will kill hogs, and is therefore of opinion that it may be employed in the manufacture of whiskey, and that hogs may eat the distillery refuse without being killed by it.

Our correspondent refers particularly to the paragraph on page 297, in reference to the charge made and denied, that strychnine had been employed in the manufacture of whiskey in Ohio, because it had been stated that distillers would not use it, as it would kill the hogs which they fed on distillery refuse. If strychnine can be eaten with impunity by hogs, the question naturally arises would not their pork be poisonous? We rather think it would neither be safe nor pleasant food. But strychnine is such a peculiar organic poison that it may be perfectly decomposed in a hog's laboratory, and its flesh, therefore, might be harmless.

The latest news from Europe brought intelligence of the death of Douglas Jerrold, said to be the greatest wit in England, and who was author of the celebrated "Caudle Lectures." He was editor of a weekly paper in London at the time of his decease. In his youth he was a printer, and by dint of genius and hard labor, acquired a high literary reputation.

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Copper.

This very important metal was used by the ancients almost to the exclusion of others, except precious metals, but it has within the last century or two been to a great extent superseded by iron, the cheapening of which has proceeded at a far more rapid rate. Ingot copper is now worth by wholesale 28 1-2 cents and pig copper 27 1-2 cents per pound, while pig iron is produced, even in this country, at 1 1-2 cents, and in Great Britain at 1 cent or less per pound. Iron is liberally distributed by nature, beds or layers of this invaluable metal being found in almost or quite every country in the world, and a sensible quantity being found even in the veins of of every warm-blooded animal, but copper is more sparingly exhibited.

Under a crushing strain cast iron is superior to wrought iron, and both are stronger than copper. Under a tensile strain, copper is intermediate between the two. A bar of wrought iron, one inch square, breaks under tensile strains of 25 to 50 tuns, a similar bar of copper under about 16 tuns, and of cast iron under from 5 to 10 tuns. Copper as ordinarily prepared is both fusible and malleable. When copper is very extensively mixed with zinc or tin, forming brass or bronze, these alloys possess the same properties in this respect. The brass tubes, now in such common use for marine boilers are made by first casting a short, thick, flattish bar, with a small rough hole through its axis, and then drawing it by suitable machinery, and shaping both its exterior and interior surfaces by dies and mandrels until a long, smooth, sound and uniform tube is produced, a mode of manufacture at present impossible with iron. In fact, to the existence of these seamless tubes is probably due in part the introduction of brass tubes into steam engineering, after they had been once pretty generally abandoned for lap-welded iron ones

Copper conducts heat and electricity with about two and a half times the facility of iron, and resists corrosion from atmospheric influences, or the action of sea water, almost infinitely better. To these latter properties are mainly due the value attached to this metal in practice. As the arts now stand, only about one-thirtieth as much copper as iron is mined. The quantity of copper produced in the world is estimated at about 35,000 tuns per annum, of which the United States furnishes 6000 tuns, mostly from native copper, and England 16,000 tuns. Large quantities of this metal in a state of superior purity are exported from Russia. Although our country produces one-sixth the copper of the world, it consumes still more, and invariably stands in the market as a buyer.

This metal is generally found associated either with sulphur or oxygen. Oxyds are rarely worked. Sulphurets are found in Connecticut, New York, Virginia, Maryland, and many other States, as black or gray ore, which, when pure, is 78 per cent copper, but copper pyrites or yellow copper ore is the most common sulphuret. It contains much iron and is often mixed with iron pyrites, either of which from their color often attract the attention of the ignorant, from a hope that they may prove to be gold. The bulk of the copper produced is from this ore, which is very plenty, but of poor quality. It does not often yield more than 12 per cent of copper, and frequently the body of a vein does not contain more than 2 per cent metal, so that the ore has to be assorted, and much rejected after it is mined. This ore occurs in Massachusetts, Vermont, New Hampshire, Maine, New York, New Jersey, Pennsylvania, Virginia, and the gold region generally, also, in Wisconsin, Missouri, Iowa; and, in fact, is diffused like iron, only to a less extent, almost over the whole globe.

Native or pure copper is also pretty widely distributed, but nowhere so plentifully as in the United States. It is found in the Lake Superior region in immense masses, the size and treatment of which must be reserved for a future article. The great source of our foreign supply is Chili. It is imported in the form of sulphuret, which is smelted in and near the principal Atlantic cities. There are one or more large establishments at this point, two in Baltimore, and one in Boston, the latter alone, we are informed, producing about two million dollars' worth per annum. The whole importation of copper and brass, aside from the ore referred to, is now less than one million dollars' worth per annum. Imported metal is principally sheathing-copper and yellow metal. The duty on copper, in pigs, has been five per cent, but this has been abolished by the new tariff.

Applying the Waste Heat of Blast Furnaces to Generate Steam.

We have received a letter from Mr. Mellen Battell, of Albany, N. Y., in which he informs us that he saw steam generated in a boiler by the waste heat from a cupola furnace, in 1826. This date is certainly prior to that of Professor Nott's patent for a like application in 1828. The place where Mr. Battel witnessed this application was in the engineering establishment of James P. Allaire, in this city. In it there was a steam engine of 20-inch stroke and 10-inch bore, running at the rate of thirty revolutions per minute; it had one boiler 20 feet long, and 30 inches diameter, using pine wood for fuel, and which worked a blowing cylinder three feet in diameter. There was a cupola furnace in the works, 30 inches in diameter and 8 feet high, over the top of which was placed another boiler two feet in diameter, and 18 feet long, built in temporary brick work. When the cupola furnace was in full blast, its heat passed under this second boiler, and generated steam sufficient to operate the engine and drive the blower. The first boiler, however, had to be used to get up the blast in the furnace, before the waste heat of the furnace was sufficient for generating the steam in the second boiler. The early application of the waste heat of the furnace to get up steam, Mr. Battel says was not of much advantage, as the molders got through with considerable casting before the waste heat became available for steam. How long this arrangement was used he does not know; he is only aware of the fact, that the waste heat was used for generating the steam for driving the engine while the furnace was in blast. The arrangement was no doubt very incomplete and of little advantage practically.

The use of the waste gases of furnaces for generating steam cannot be economically applied, except in regular iron smelting establishments, where the blasts are kept in operation continually. Old James P. Allaire, however, deserves credit for his early endeavors to save the waste heat, and apply it to a useful purpose. The statement by Mr. Battel, that *pine wood* was then used for fuel, puts us in remembrance of the great change which has taken place in the use of coal for steam engines in the past twenty years. In 1836 nearly all, if not all, the steamboats running on the Hudson river used firewood for fuel —not one employs it now. Locomotive engineers appear to be now in the same transition state, respecting the change from wood to coal fuel, that our steamboat engineers were from 1836 to 1840.

Hoop Skirts and Umbrellas.

"Whalebone has nearly doubled in price within the past four years, in consequence of the enormous consumption of the article in skirt-hoops. In places where the price was forty or fifty, it is now eighty or ninety cents per pound. The *Commercial List* of to-day reports a sale of eighty thousand pounds at ninety-five. An umbrella dealer informs us that at retail he has been obliged to pay a dollar and a half a pound for the manufactured article, and the five dollar umbrellas of two months ago are now sold for six. Nor is this all. The braces have become greatly attenuated, being hardly more than half the size they were in the old-fashioned umbrellas, so that the prospect is, we shall be compelled to rely wholly on steel braces, which have experienced no such appreciation."

The above we copy from an exchange paper. The most common article now employed for skirt-hoops is narrow ribbon, made of brass wire rolled flat between the rollers. It has considerable elasticity, as the rolling process imparts *spring* to brass. It is not alone the increased demand for hoops that has raised the price of whalebone, but the decrease in the supply. Steel has been used for umbrella braces, and it possesses the qualities of strength and elasticity requisite for this purpose in an eminent degree; but it has one defect which renders it unfit for such applications, that is, its great liability to rust. The coating of it with varnish does not remedy this defect, because it is soon worn off with the use to which an umbrella is subjected. Neither iron nor steel should be employed in such articles as umbrellas, exposed as they are to the action of water. Brass braces, as substitutes for whalebone, are superior to steel for umbrellas, but a composition of india rubber or gutta percha can be made to answer the purpose better than any of the cheap metals.

English Railroad Accomodations.

Zerah Colburn, known as an exceedingly vigorous thinker and clear writer on American railroading, has recently visited England to inspect the British railway system. He writes home to the *R. R. Advocate* that "there are no brakes on any cars of a passenger train, except on a 'luggage-van' as it is called. And the brakes, such as are used, are pushed against the wheels instead of being made to gripe them, and the brake apparatus here is bulky, even clumsy, compared with ours.

"As a general thing there is no bell-cord along the train—and there is no other mode of communication between the engineer and conductor. I cannot find out there is any difficulty in using the bell-cord, except that among so many roads, all the companies will not unite in so simple a provision, and hence when their cars are mixed, many are unprovided. You will think this a paltry excuse for the want of a communication so important as that from the train to the engine. For here it is no joke to ride in small close compartments with the car doors *locked* (for safety!) and no conductor in sight, from one end of a trip to the other. The want of some communication appears to be felt in the minds of some few inventive men, for in every odd number of any English scientific journal, you will see some wonderful scheme for supplying the means. One which I remember was, to fix a large bell over the engineer's head, and to let the conductor shoot at this bell with an arrow, so as to attract attention on the engine! I believe I have heard an electric telegraph proposed for the same purpose. And another plan was to fix large convex mirrors in front of the engineers in which he should see if anything (!) was the matter with the train behind him. Without prejudice, you will say that such contrivances are as futile as the present absence of communication is barbarous.

"There is no such thing as a water-closet in an English car; and the india rubber and some other dealers in the towns, drive quite a trade in a portable article designed to supply the want.

"As to speed. There are instances of trains being in motion at speeds of 60 miles per hour. But for express train travel the average time, excluding stops, is 35 miles per hour—the actual running speed sometimes reaching 40 miles—but including stops it is 30 miles an hour. We do quite as well as this. You must observe, also, that the express or quickest trains here, are the lightest loaded, as the price per mile to passengers is very high in these trains. With us, every passenger will take the quickest train he can, especially as the price is all the same. The general average speed, throughout England, is probably higher than with us—yet the difference is due more to a better state of road here, than to any other cause."

American Telegraphers.

As an evidence of the growing appreciation of American mechanical skill, the Philadelphia *Ledger* states that the governments of the three colonies in Australia have commenced the construction of nearly one thousand miles of magnetic telegraph, to be completed at the close of the present year, and have selected S. W. McGowan, formerly in charge of the office of the New York, Albany and Buffalo Telegraph, in this city, as superintendent of the construction of the lines, which are to be worked under Morse's patent. They extend from Melbourne to Sidney, 600 miles; from Melbourne to river Glenely where the line from South Australia, of 230 miles, is met, and from Launceston to Hobart's Town, Van Dieman's Land, 120 miles. Lines from Melbourne to Bendigo, 102 miles and from Melbourne to Balaraat, 108 miles, are just opened. All of the above lines are to be under the supervision of Mr. McGowan, who is commissioned by the home government as Superintendent of Telegraphs in its Australian colonies. The instruments, batteries, materials, &c., have been ordered from this city, and are to be of the most finished and perfect construction.

Hungary Water.

This perfumed liquid is said to take its name from one of the Queens of Hungary, who is reported to have derived great benefit from a bath containing it, at the age of seventy-five. It is composed thus:—Rectified alcohol, one quart; oil of English rosemary, half an ounce; oil of lemon peel, and oil of balm (*melissa*), of each a quarter of an ounce; oil of mint, seven drops; spirituous essence of rose, and spirituous essence of orange flowers, of each a quarter pint. After being well mixed it is ready for use.

It will be seen that rosemary is the leading ingredient in the above recipe. There is no doubt that clergymen and orators, while speaking for a long time, would derive great benefit from perfuming their handkerchiefs with Hungary water or eau de Cologne, as the rosemary they contain excites the mind to a vigorous action, sufficient of the stimulant being inhaled by occasionally wiping the face with a handkerchief wetted with these "waters." Some such property of rosemary was evidently known to Shakspeare, who says, "There's rosemary, that's for remembrance." Now the poet giving us the key, we can understand how it is that perfumes containing rosemary are so universally said to be "so refreshing."

SEPTIMUS PIESSE.

Enlightened Cities.

In the year 1855, the enormous quantity of three thousand millions of cubic feet of gas were consumed in the city of London. In the same year, there were 600,000,000 cubic feet consumed in New-York, which equals the consumption of London, according to the number of hours gas is required. London has such a smoky and foggy atmosphere, that gas-light is employed during a greater number of hours yearly than in New-York.

The effect of artificial light upon the health of man, is a very interesting subject for investigation by physicians, for undoubtedly its influence is very great.

L. R. BREISACH.

A Runaway River—A Deserted Town.

The *Nebraskian* of the 1st inst. describes a flagrant outrage upon "squatter sovereignty" as having been lately perpetrated by the Missouri, in the vicinity of De Soto, Washington county, in that Territory. The ice gorged in the bend of the river, a few miles above that town, and the water, with a criminal disregard of the rights of De Soto and her ferry privileges, took a short cut across the bend, forcing a channel near Calhoun, Iowa and making De Soto an inland town of Nebraska, some four or five miles from the river, to the infinite disgust of the inhabitants of that city. By this arrangement a few thousand acres of land will be added to the already extensive domains of Nebraska.

East India Cotton for America.

The Liverpool *Ti mes* states that severa hundred bales of East India cotton have been entered at that port to be shipped to New York. This appears to be like sending coals to New Castle; but this cotton is so very coarse, that we have no American cotton like it, either in poverty of quality or lowness of price; and it is no doubt exported by way of experiment, for making cheap cotton cord, or coarse bagging.

The Pennsylvania Polytechnic Institute in Philadelphia has added to its geological collection a full *suite* of specimens which illustrate the entire mineralogy of Berks and Delaware counties, Pa.

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O. B. D., of N. J.—In order to make your own testimony available in the examination as to the date of your invention, it is necessary that you assign your entire interest in the invention to some other party. The assignee must see that the assignment is on record at the Patent Office.

F. G., of Md.—Your invention might have been patented about forty years ago, but it is not now.

W. B. C., of Mass.—The date of the American patent should correspond with the British patent, and be dated back, if the foreign patent was taken first.

E. B. & Co., of Wis.—The velocity of steam issuing from a pipe under 100 pounds pressure is 1253 feet per second.

W. C.—We cannot answer your question as it is put to us. You had better send us a sketch of the device you intend to use. This will present the subject in a tangible shape. You cannot produce a perpetual motion, therefore, no matter what you have got, it will not come under that head.

G. E., of Ill.—Cupper's work on Stair Building is published by J. Gowan, Center street, this city.

B. H., of M. T.—We do not know where you can procure a clapboard machine. We have no Vol. II on hand.

J. F.—We do not think it possible to obtain a patent for directing papers by labels, even though it had never been used It is not an invention within the meaning of the law.

J. J. H., of Ky.—We have not heard much of the Hughes Telegraph recently. Reports are favorable to its success. We cannot say how far practice justifies them.

W. R., of Ohio.—There is no publication in this country devoted exclusively to chemical science. Such a work could not be sustained.

H. W., of N. Y.—The application of a fan to a straw-cutting machine for blowing out the dust, could not be regarded as a patentable device. It would be considered as a similar device to employ a fan to a grain separator, or other similar machine.

E. W. S., of Iowa.—We do not know Bronson Murray's Post Office address, therefore cannot mail your letter to him.

C. W. W., of Ga.—Couplings capable of unlocking one car from another when thrown from the track are getting to be quite common. There are a number of patents on such devices. If your proposed plan is new, a patent can be secured for it.

G. & W., of Ohio.—We believe there is novelty enough in your hominy machine to justify an application for a patent.

H. C. S., of Ill.—Bourne's Catechism of the Steam Engine will give you all the necessary information required. It is published by D. Appleton & Co., this city.

E. W. E., of Conn.—The instrument which you call a "syphon," which discharges at the top, is not a syphon according to our views. W. B. Leonard, Esq., is the Corresponding Secretary of the American Institute; direct your letter to him.

J. W. C., of Ky.—There is no such thing as withdrawing a caveat after it is once filed in the Patent Office. The amount paid into the Treasury as caveat fees is forever retained.

H. & F., of Philadelphia.—Ivory steeped in dilute muriatic acid is rendered soft and flexible, but is changed from white to a yellow color. It must be washed in water after it is taken out of the acid, and then exposed to sunlight, to bleach it.

H G. B., of Ill.—There are several patents on portable rock-drilling machines. In back volumes of Sci. Am. you will find several illustrations of such machines. There are good inventions for performing this work, but not many out of the whole have met with success.

A. S. McO., of Ill.—A substance that will entirely prevent the needle of the compass on board of ships being attracted by a local magnetic current, is valuable. A ring of metal and iron wire gauze, placed around the needle is now employed for this purpose, and a patent has been granted for the arrangement. This invention has been used with success on board of the new steamer Vanderbilt, but it has not yet been tried on an iron ship. There is considerable local attraction in all steamships—those of wood or iron—because of the great amount of iron in the engines.

J. B. J., of Mich.—It is very easy to account for the vibrating and heating of saws in passing through hard pine knots; they are so hard that they offer far greater resistance to the passage of the saw than the softer parts of the wood.

H. W., of N. Y.—It is our opinion that messages can be sent through the Atlantic cable.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, June 27, 1857:—

J. M. H., of Ill., $37; J. C., of Ill., $30; W. & H., of Ala., $30; W. H., of Wis., $20; N. A. De W., of Ill., $30; D. F. L., of N. Y., $100; G. H. W., of Wis., $30; H. B., of Conn., $30; B. B., of Conn., $50; J. McM., of N. Y., $30; J. C. S., of Mass., $40; A. R., of N. Y., $29; W. W. B., of N. Y., $30; T. E. C. B., of Ky., $30; O. L. & D., of O., $25; W. H. G., of N. H., $30; J. C., of Pa, $25; A. C., of Iowa, $15; W. R., of L. I., $20; J. C., of O., $30; M. T., of Ill., $30; P. D., of O., $15; J. G. A., of N. J., $30; J. M., of O., $25; J. B. C., of Tenn., $25; D. F., of N. Y., $30; J. P., of Conn., $10; A. A., of Del., $47; B. D. S., of Mass., $30; P. H., of Ill., $30; J. M. B., of Pa, $30; McN. & C., of N. Y., $30; L. & M., of Conn. $25; N. S., of N. Y., $5; S. G., Jr., of N. Y., $10; M. & R., of N. Y., $25; I. M., of N. Y., $25; J. L., of Pa., $25; P. F. C., of O., $60; W. B., of Ill., $30; S. L., of Ga., $60; G. H. W., of Wis., $27.5.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 27, 1857:

E. K. C., of Mass.; J. C. S., of Mass.; W. R., of N. Y.; E. H. De W., of O.; J. M. H., of Ill.; J. C. McD., of O.; G. V. B., of Mo.; J. F & E. W., of N. Y.; N. S., of N. Y.; J. M., of O.; J. B. C., of Tenn.; P. C., of Conn.; M. & R., of N. Y.; I. M., of N. Y.; A. A., of Del.; J. L., of Pa.; A. R., of N. Y.; W. R., of L. I.; W. H. G., of N. H.; S. G. McM., of Ill.; P. H., of Ill. S. & B., of Ct.; T. E. C. B., of Ky.; S. G., Jr., of N. Y.

Literary Notices.

London Quarterly Review.—The number for this quarter for this able Review contains eight essays, the leading one being "Pedestrianism in Switzerland, which contains a vast amount of exceedingly useful information to travellers, and which we recommend to all tourists who have a penchant for excursions in mountainous regions. All the other articles are good.

Blackwood's Magazine.—The present number of this renowned monthly contains "The Athelings," continued; "A Run to Nicaragua;" "Life in Central Asia;" "The Sculptured Stones of Scotland," and five other articles—a good number. These periodicals are republished by Leonard, Scott & Co., No. 54 Gold street, this city.

Emerson's United States Magazine is a very excellent periodical. The July number contains several very interesting articles. Those of chief interest are the "Life of Washington," illustrated; "Manufacture of Newspapers;" "My Thirty Years out of the Senate, by Jack Downing." Messrs. Emerson are determined to make this magazine one of the first periodicals of the day. We do not know of a better one. Office of publication, No. 1 Spruce street, New York.

IMPORTANT TO INVENTORS.

The rapid growth of our Patent Agency Business, during the past three years, has required a great addition to our ordinary facilities for its performance, and we are now able to announce the completion of a system which cannot fail to arrest the attention of all who have business of this kind to transact.

OUR PRINCIPAL OFFICE

will be, as usual, at No. 128 Fulton street, New York There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we have established a

BRANCH OFFICE IN THE CITY OF WASHINGTON,

on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general care of one of the firm, assisted by experienced Examiners. The Branch Office is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington having business at the Patent Office are cordially invited to call at our office.

A SPECIAL REQUEST.

Our facilities for the speedy preparation of cases previous to the application for the patent being much more extensive in New York than at Washington, we especially require that all letters, models and remittances should be made to our address here.

EXAMINATION OF INVENTIONS.

We have been accustomed from the commencement of our business—twelve years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice freely and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

Our extensive experience in mechanical and chemical improvements enables us to decide adversely to nearly one half of the cases presented to us for our opinion, before any expense has occurred in the preparation of the case for a patent.

When doubt exists in regard to the novelty of an invention, we advise in such cases a

PRELIMINARY EXAMINATION

to be made at the Patent Office. We are prepared to conduct such examinations at the Patent Office through our "Branch Agency," upon being furnished with a sketch and discription of the improvement. Our fee for this service will be $5.

After sufficient experience under this system, we confidently recommend it as a safe precautionary step in all cases before application is made for a patent—not that there will be no rejections under the system It is impossible to avoid such results in many cases, owing to the exceedingly wide range taken by the Examiners in the examination of cases; but, nevertheless, many applicants will be saved the expense of an application by adopting this course. Applicants who expect answers by mail must enclose stamps to pay return postage.

THE COSTS ATTENDING AN APPLICATION

for a Patent through our Agency are very moderate, and great care is exercised in their preparation. No cases are lost for want of care on our part in drawing up the papers, and if the claims are rejected, we enter upon a speedy examination of the reasons assigned by the Commissioner of Patents for the refusal, and make a report to our clients as to the prospects of success by further prosecution.

A circular containing fuller information respecting the method of applying for Patents can be had gratis at either of our offices.

REJECTED APPLICATIONS.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard Saint Martin, Paris, and 3 Rue Therrsienne, Brussels. We think we may safely say that three-fourths of all the European Patents secured to American citizens are procured through our agency.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to inventors. Any one can take a Patent there.

Circulars of information sent free on application.

☞ Remember the SCIENTIFIC AMERICAN PATENT AGENCY, No. 128 Fulton street.

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IMPORTANT NOTICE TO PATENTEES—A gentleman of influence and experience going back to Russia for arranging the sale of an American patent, is inclined to attend to some other patents. Preference given to chemical improvements, and such inventions which may be suitable for government service. No agents or third persons will be noticed, as only the owners of the patents are requested to give full particulars of their improvements. For further information address Box 2870, New York Post Office. 1*

SENT POST PAID FOR $1 IN GOLD—Fishermen would do well by getting Gardner's new, sure and easy way of catching all kinds of fish. Address N. R. GARDNER, Peace Dale, R. I. 43 3*

TO MILLERS AND MILLWRIGHTS—Patent rights of our Grain Feeder to Millstones for sale on moderate terms. See illustration in No. 43, this Vol., Scientific American. M. & C. PAINTER, Owings' Mills, Baltimore co., Md. 43 3*

THE AMERICAN ROCK DRILL CO., invite attention to their superior machines for Artesian Wells and heavy rock excavations. Circulars and information sent on application to T. H. LEAVITT, Agent, No. 1 Phœnix Building, Boston. A few responsible agents wanted in the Middle and Western States. 43 3*

DR. D. BREED, late Assistant and acting Chief Examiner in the U. S. Patent Office, has established at Washington, D. C., a chemical laboratory for experiment and analysis, in order to test and improve processes of manufacture, and mechanical devices employed in the chemical arts, and to procure and defend patent rights. After many years devoted to chemistry (having studied in the German laboratories) Dr. Breed feels confident in offering his services as a practical chemist to inventors and others interested in the chemical arts and manufactures. 43 10*

VALUABLE PATENT RIGHTS FOR SALE—Gibbs' Universal Adjustable Clamp, for carpenters, cabinet makers, coach and wagon makers, boat builders, &c., &c. The pressure is applied by a simple lever, and its power is only limited by the strength of the material of which it is made. The force can be momentarily applied to any thickness of stuff, from 1-4 inch to several feet. It is also superior to anything heretofore made to fasten sewing machines, sewing birds, or any other article, to a table, stand or bench, and can be applied to numerous other purposes. Manufactured by E. H. Ogden, and for sale at his warehouse, 307 Arch st, Philadelphia. State, county and shop rights for sale. For further information address J. H. RUCKMAN, Mill Point, Va., or JAMES E. A. GIBBS, 702 Chestnut st., Philadelphia, 1*

HUGHES' ATMOSPHERIC FORGE AND Trip Hammer.—These hammers have been in successful operation for more than two years, and have acquired a reputation of decided superiority over all others. I am now prepared to furnish them of all sizes. I will warrant them to give satisfaction to purchasers, and that they will require no repairs for one year from their delivery. Orders addressed to me will receive prompt attention. B. HUGHES, Rochester, N. Y. 43 2*

CAST STEEL WIRE DRAWING at the Union Works, Paterson, N. J. Orders solicited and carefully filled by CHAMBERLIN & CO. 43 13*

THE GREAT LIBRARY OFFER.—Every person who gets up a club of twenty subscribers for EMERSON'S MAGAZINE and UNITED STATES JOURNAL will be presented with a magnificent Library of Forty Large and Splendid Bound Volumes—a rich reward for a few hours' work. Send 25 cents, and you will receive by return mail specimen copies worth more than the money, and full particulars.

Send also for our annual circular, containing full illustrated descriptions of our patent machinery, including the Combination Portable Steam Sawmill, the cheapest and best lumber manufacturing machine in the world—Willard's Seed Sower, which will sow and cover, in the very best manner, 25 acres of any kind of grain per day—The Portable Plantation Engine—Ross' Portable Burr-Stone Mill, &c. J. M. EMERSON & CO., Publishers, and Dealers in Improved Machinery, No. 1 Spruce st., New York. 1

STEAM ENGINES FOR SALE.—Two 5-horse power and one 30-horse power, with or without the boilers. Address J. R. JONES, Novelty Iron Works, Harrisburgh, Pa. 43 4*

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WANTED—By a Young Man, who is a Machinist to trade, and has some knowledge of draughting, a situation with a first class Engineer. Salary no object. Address A. A., 194 Grand street, New York City. 1

SPOKE TURNING MACHINES of Superior quality. Apply to WM. F. REED & CO., 56 Gold st. 41 4*

COMMERCIAL AGENTS, able and honest men from New England or New York. A. W. HARRISON. Philadelphia, Pa. 35 13*

READ ALL YE THAT ARE FOND OF FISHING—I will send for $1 a secret art of catching fish as fast as you can pull them out. This is no humbug. Address N. R. GARDNER, Peace Dale, R. I. 42 4*

MACHINISTS' TOOLS—LEONARD & CLARK, 11 Platt st., New York, manufacturers of Lathes and Planers, and dealers in Steam Engines, Boilers, Wood Tools, Belting, &c. Awarded the gold medal 1855 and '56 of the American Institute, and bronze medal of the World's Fair 1853, for the best lathes on exhibition Machine shop at Woodna, Orange co., N. Y. 42 4*

MACHINISTS' TOOLS.—CARPENTER & PLASS 479 First ave., New York, have constantly on hand and make to order all kinds of machinists' tools of superior quality, particularly adapted for railway companies, steam engine builders, &c., whose orders are respectfully solicited, and shipped at short notice—terms moderate. Also a few second-hand tools, one 16 ft. and one 8 ft. iron planer, two slide lathes, 12 and 16 ft, and one 8 ft. face lathe. 42 3*

FIVE HUNDRED THOUSAND LOOMS in the United States—Wm. H. Howard's Comb Temples, patented May 26, 1857, are already in successful operation. The principle is new; it measures every pick to an equal length, indicates the number of picks per inch, leaves a smooth and equal selvage, without displacing threads or marking cloth; simple, cheap and durable, and destined to supersede all other self-acting temples. Orders for temples, or inquiries for rights to manufacture will receive immediate attention if addressed to GEO. C. HOWARD, 18th, below Market, Philadelphia. 42 4*

THE BEST PLANING MACHINE IN THE World—Patented Nov. 21, 1854 and Nov. 13, 1855. These patents were obtained for improvements upon the celebrated Woodworth Planing Machine. They received a Gold Medal at the last exhibition of the Massachusetts Charitable Mechanics' Association. Machines of all kinds and sizes constantly on hand, which are warranted to give entire satisfaction, and to be superior to any now in use. For further information address the patentee, JAMES A. WOODBURY, No. 1 Scollay's Building, Court st, Boston, Mass. 42 13*

A WALLET safe against pickpockets or loss sent for $1. DICKINSON & BATE, Hudson, Mich. 40 4*

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ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, Machinery Oil of the most approved kind, etc.

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PORTABLE STEAM ENGINES.—S. C. HILLS No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weigh 1500 lbs., price $240; other sizes in proportion. 28 e3w

PUMPS—BURNAP'S Patent Excelsior Pumps are acknowledged to be the best and most durable force pump in use, and are fast taking the place of all others for steamers, factories, breweries, &c. See engraving in No. 34, this Vol. Scientific American. Address BURNAP & BRISTOL, Albany, N. Y. 34 13*

WOODWORTH'S PATENT PLANING MAchines of every kind and all prices. A large assortment on hand; and I am prepared to construct any machine to order from ten days to two weeks, and guarantee each machine to be perfect in its construction, and give purchasers entire satisfaction. The patent has expired, and will not be renewed. I make this business exclusive, manufacturing nothing but the Woodworth Machines, and for that reason can make a better article for less money; and with my fifteen years' experience I fully guarantee each machine to come up to what I am willing to recommend, that is, that each machine shall be more than equal to any other manufactured for the same price. JOHN H. LESTER, 57 Pearl st., Brooklyn, N. Y., three blocks above Fulton Ferry. 35 tf

STEAM PUMPS, Boiler Feed Pumps, Stop Valves, Oil Cups, Cocks, Steam and Water Gauges, sold by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

PECK'S PATENT DROP PRESS—The best machine in use for stamping jewelry, ornaments, tinware, swedging iron, &c. A supply of all sizes on hand and made to order by the patentee, MILO PECK, New Haven Conn. State rights for sale. 40 4*

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ENGRAVING ON WOOD and MECHANICAL DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, N. Y., Engraver to the Scientific American. 16tf

TO INVENTORS AND MANUFACTURERS—Rooms with power, for the exhibition of machinery, can be had in the Depot Buildings, corner of Elm and Franklin sts. The location is extremely desirable for its prominence and convenience to the business part of the city. Apply to T. BENNETT, on the premises. 43 tf

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY John H. Cheever, Treasurer, No. 6 Dey street, N. Y 40 tf

$1,000 FOR A VALUABLE consideration we have furnished to J. R. STAFFORD, Practical Chemist, 16 State st., N. Y, a selection of one hundred of our Choicest Receipts for Cooking Baking, &c., the same being in constant use in our Hotel The receipts selected are those which are the best adapted to the use of private families. SIMEON LELAND & CO. Metropolitan Hotel, Broadway, New York April 6, 1857.

The above receipts have been added to J. R. Stafford's Family Receipt Book, which now contains more than 250 of the most valuable receipts that have ever been published. The above book also contains a chart 23 by 33 inches, on which are 24 splendidly engraved Anatomical Illustrations of the Human Body. This magnificent chart should be hung up in every family setting-room. The Book and Chart will be sent free of postage on receipt of 12 cents or stamps, by J. R. STAFFORD, Practical Chemist, 16 State st., New York 38 tf

BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 27 tf

FORBES & BOND, Artists, 89 Nassau st, N. Y., Mechanical and general Draughtsmen on wood, stone, &c

LAP-WELDED IRON BOILER TUBES.—Prosser's Patent.—Every article necessary to drill the tube-plates, and set the tubes in the best manner.
18 tf THOS. PROSSER & SON, 28 Platt st., N. Y

50 STEAM ENGINES—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM BURDON, 102 Front st., Brooklyn. 27 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 27 tf

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 40 tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters Chucks &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 40 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 40 tf

WOODWORTH'S PATENT PLANING MAchines—Patent expires Dec. 27th, 1856. Machines constantly on hand, together with steam engines and boilers of all sizes. Lathes, planers, drills, circular saw mills, belting of leather and rubber of the best quality, Orders respectfully solicited at the Machinery Depot, 163 Greenwich st., N. Y. A. L. ACKERMAN. 36 8

WOODWORTH PLANERS, STEAM ENgines, &c.—Twenty-seven years' experience enables me to furnish Woodworth Planers for surfacing one or both sides, planing and matching, rabbiting, beading, or for moldings or clapboards, in any variety of beautiful construction and great power. Ample evidence of the superiority of my machines will be furnished from parties that have other machines in the same mill. Every machine will be accompanied, if desired, with a written warrantee. As some parties have been supplied with machines of another make when they supposed the were getting mine, I would advise that purchasers shoul buy none unless my name is on in full. Matteawa steam engines, machinists' tools, cotton and woolen, sash blind and door machinery, leather banding, &c., furnished at the manufactory at Matteawan, N. Y., or at 62 Courtland street, N. Y. S. B. SCHENCK, Agent. 39

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Science and Art.

Tanning Cotton and Wheel Hubs.

In a letter received from Mr. C. B. Stewart, of Danville, Tex., he states that the durability of cotton cloth is greatly increased by being impregnated with tannin. He has tanned cotton cloth for bags, saddle girths, and negro clothing, and found that it lasted much longer than when untanned. The hubs of wheels and axe handles, he also states, are frequently submitted to the tan liquor at the South, and with good results, their durability being promoted by such treatment. He suggests the application of tannin to all cotton fabrics exposed to the weather, such as awnings, the sails of boats, &c.

Many of our coasting schooners and sloops, we observe, now use sails tanned with oak bark. They last three times longer, at least, than sail cloth not treated with tannin or some other antiseptic agent.

The Divining Rod a Deception.

The editor of the Saint Croix *Union*, published at Stillwater, Minn., says:—"The divining rod is an arrant humbug, and those using it, pretending that there is in the rod a mysterious and unaccountable virtue, are also humbugs. We know what we say, and intend it, too. Not only will a twig of a sweet apple tree point downwards in our hands, but a bifurcated twig of almost any tree will. We can take a twig of a willow, or an oak, or hickory, or anything, and hold it in our hands and make it turn forty ways for Sunday. It isn't a stream of water beneath us that does it, either, for we can make it point to a heap of ashes, or rock as hard as a nether millstone. It makes no difference.

. . . . We don't deny that water has been frequently found exactly beneath the spot indicated by the divining rod; this has happened in our case more than once, but it is just as true also that, in numberless other cases that have come under our observation, men have dug long—dug deep—and spent stacks of money by digging where these aforesaid mysterious rods have pointed, and found no water."

Improved Grist Mill Feeder.

Since large stones, driven by power, at a very high velocity, have, in civilized countries, been employed as substitutes for the small hand-mills still in use in the Eastern countries, and from which we may suppose the hint was derived, more or less difficulty has been found in feeding in the grain uniformly, and in preventing the eye or central hole in the running stone from becoming clogged. The great centrifugal force sometimes induces the grain to accumulate against the sides, and, in most cases, the more or less complex devices employed to shake in the grain, are but poor approximations to a uniform feed.

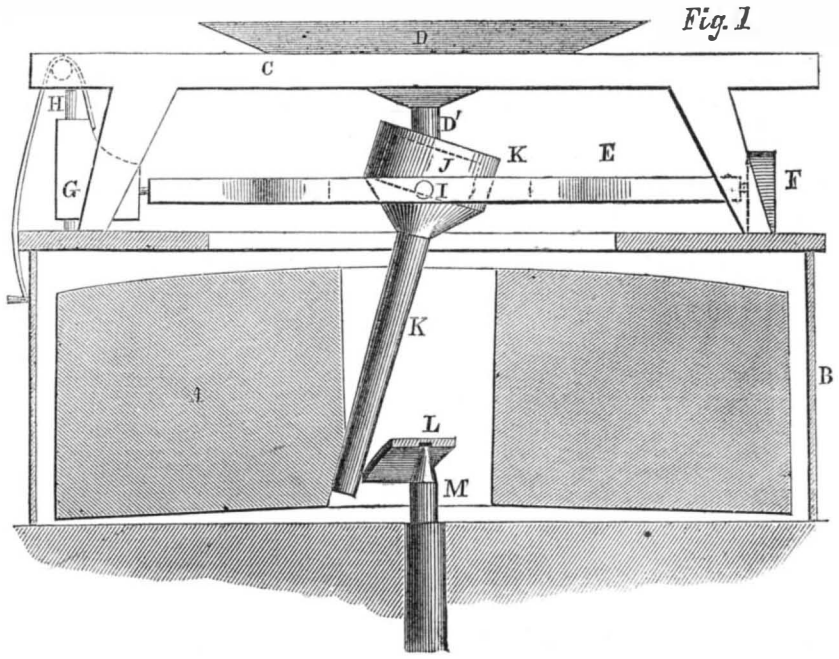
The mill here represented is the subject of two patents, granted to Messrs. M. and C. Painter, of Owing's Mills, Maryland, the first on June 2nd, 1855, and the other on July 1st, 1856. Both are here represented quite clearly. Each figure is a vertical section, the plane of section in Fig. 2 being taken at right angles to that in Fig. 1. A is the upper or runner stone. C is a frame which serves to support the hopper D. D′ is a tube leading down from D, and extending a short depth into the cup J. Neglecting for a moment the action of this cup, which forms the subject of the second patent, we will describe the feeding-tube. M is the upper extremity of the driving-shaft. L is the bail which enables M to support the weight of A. The ordinary driver is employed to transmit the motion of M to A, but is not represented, as it might complicate and confuse the drawing. K is the feeding-tube, which is expanded at the top to form a large cup E, and is supported by pivots I, in an opening in the bar E. The pivots I, allow a swinging of K in one direction, and the bar E, being free to rotate on the pivots F and G, allows it to swing in the other direction, so that it is, in effect, mounted on a universal joint, and swings freely around, but without turning on its axis, as the mill-stone revolves.

J is a cup suspended by wires or slight transverse rods in the centre of E. When in action, it is always filled with grain, and by its swaying alternately in every direction while the tube D′ is stationary, compels a portion of the grain to be continuously pushed over its edge. So long as any grain remains in D, it will be continually supplied through the tube D′, and fed uniformly over the edge of J, at a rate corresponding exactly with the revolutions of A.

The pivot F is supported on a fixed standard,

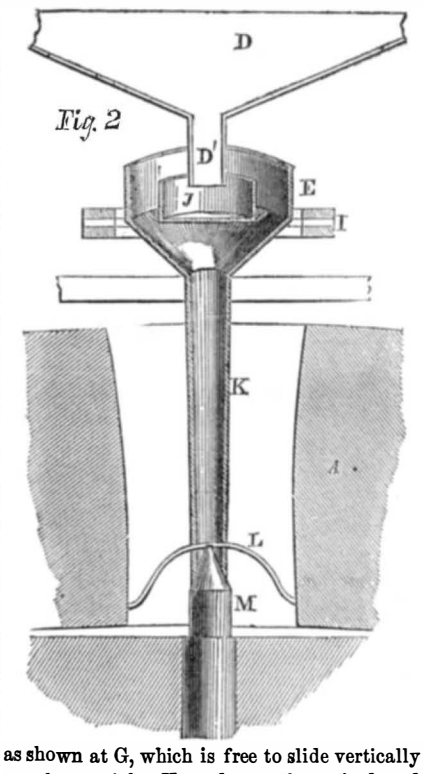
PAINTER'S GRIST MILL FEEDER.

Fig. 1



as represented, but the pivot at the other extremity of the bar E is carried in a block

Fig. 2



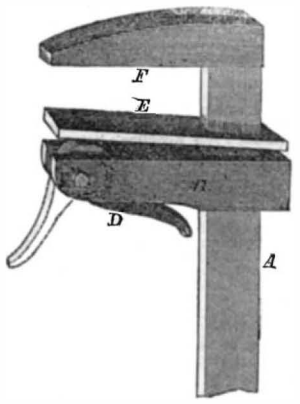
as shown at G, which is free to slide vertically on the upright H, and may be raised and lowered thereon by the aid of a strap, passing over a pulley, and attached to a pin below. By raising or lowering G, the rocking bar E and its attachments are correspondingly affected; and the action of the parts D′ J modified so as to vary the speed at pleasure. This feeder has been thoroughly tried for more than a year past, and will feed with the utmost regularity and precision not only grain of all kinds, but any material however fine, and as it carries down the matter and distributes it evenly around in the bed stone at the verge of the eye, there is no possibility of clogging, and the stone may be run at any speed whatever. The faster they run, the greater the certainty of discharging regularly, as both gravity and centrifugal force carry down the material. The shoe and damsel are entirely dispensed with, and the cost of the apparatus is less than that of the article named. It is exceedingly simple and durable. The inventors believe that no other contrivance has been found so well to surmount all the difficulties at a high speed without interfering with a proper ventilation in the eye of the stone, which latter point is a great desideratum in the manufacture of good flour. The apparatus can be applied to old burrs with ordinary fixtures, in the space of an hour's time, merely by substitution.

For further information, the patentees may be addressed—M. & C. Painter, Owing's Mills, Maryland.

Gibbs' Universal Adjustable Clamp.

The accompanying figure represents one of those useful devices—an adjustable clamp—so convenient for workers in wood, such as carpenters, and cabinet-makers, for holding planks, boards and other stuffs to be operated upon.

A is the shank, B is the lower sliding jaw, and F the upper stationary jaw, firmly secured



to or forming part of the shank; E is a sliding plate, through which the shank passes. D is a lever, with its end formed with a cam head, placed in a slot in jaw B, and working on a pivot C. The shank A may be made of any length desirable, so that the space between the upper jaw and the plate E may be enlarged or diminished, according to the thickness of stuff to be clamped, and held fast between them.

When stuff is to be taken out or put in the clamp, the lever D is turned in the position represented by the dotted lines; which allows plate E to lie close and flat on the lower jaw or slide rest B. When stuff is to be secured in the clamp, the lever D is turned down as shown, and the cam head then forces the plate E against the stuff and holds it firmly between the plate and jaw F. The sliding plate E presses evenly against the board, and holds it accurately in place, without making an indent, or exerting unequal pressure on it. It is an excellent clamp for cabinet-makers and joiners, also for numerous other purposes, as it can be operated so easily and fastened and unfastened readily, and can be used in the reverse, or the position represented.

A patent was granted for it on the 17th of February last to J. E. A. Gibbs.

For more information, see advertisement on another page, or address Mr. Gibbs, at 702 Chestnut st., Philadelphia, or J. H. Ruckman, of Mill Point, Va.

Experiments with Breech Loading Rifles.

Telegraphic reports to this city give an account of a trial with breech-loading rifles, which took place at the United States Arsenal, Washington, D. C., on the 24th inst., before the Secretaries of War and the Navy, and a large company of spectators. The following war implements were entered for competition: Colt's rifle carbine and pistol, distance one, two, and four hundred yards; Sharp's rifle and carbine, same distance; Burnsides' "Rhode Island" rifle, same distance; Merills' "Baltimore" rifle and carbine, same distance.

The result of the test applied is not yet ascertained in detail. At one hundred yards, Sharp's rifle proved the most accurate, though there was a spirited contest with Colt's and Burnsides'. At three hundred yards the contest was nearly equal, Sharp's missing once. At four hundred and five hundred yards, Colt's rifle won the day. Burnsides' carbine beat Sharp's at five hundred yards, the latter hitting the target only once in five shots.

The Secretary of the Navy made some excellent shots with Colt's pistols at one hundred yards. Why one rifle was most accurate in aim at one hundred yards and least accurate at five hundred yards has not been made public. There must be a reason for this contradictory action in its performance.

American Salt.

The annual salt product of the United States amounts to 12,370,000 bushels. New York is the greatest producer, her amount being 6,000,000 bushels; Virginia next, her product being 3,500,000 bushels. In eleven States the manufacture of salt is carried on, the great sources of supply being salt brine obtained from deep wells far removed from the ocean.

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